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National Emergency System Analysis

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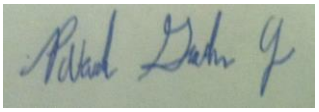

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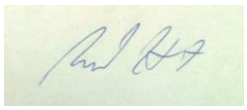

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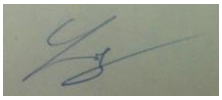

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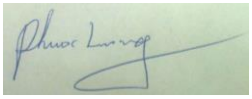

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Abstract

Reducing the time delays involved with 9-1-1 emergency calls is very essential for better healthcare. The sooner a patient or victim can be reached by emergency services, the higher their chances were for surviving a potentially fatal condition. In this report, aspects of emergency communication has been researched and presented – from the history of 9-1-1 emergency communications to the current call structure and standard operating procedures. The results of these findings were the basis for the suggestions that would improve the current emergency communication structure. In addition, a composite care index was created to evaluate the efficiency of emergency services response time and patient care. Two possible solutions for reducing time response delay in emergency communication are proposed. Firstly, control theory was applied to 9-1-1 communcation structure. This control theory provided an opportunity to learn more about dispatch time delays and its affecting factors. Secondly, a program called eGuideCard was created as an assisting tool for emergency call receiving personnel. This program provides the call receiver with an appopriate set of questions for the caller and instructions for the procedure. The program relieved call receivers with stress and responsibility and reduced decision making time delays. The possible implications of this project include but are not limited to the following: faster response and greater efficiency in responding to emergency 911 calls. Faster care led to a decrease in time as well as money spent and less stress on both the patient and the first responders involved. Greater efficiency ensured that the patient acquires the treatment they need as soon as possible, greatly increasing their chances of survival.

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Acknowledgments

We want to give our deepest appreciation to Professor Mustapha Fofana for his guidedance as our advisor as well as partner throughout the course of this project. We also want to thank all members of MIRAD Laboratory of Worcester Polytechnic Institute for the assistance and critism. Lastly, we give our gratitude to UMASS Worcester and Boston for their information and input.

CHAPTER 1: EMS CALL TIME RESPONSE

1. Introduction

Today, along increasing number of population and expanding growth in finance, an advanced healthcare is also an indicator of a good economy. A good healthcare system essentially means a population with long and healthy life. Therefore, one of the most important concern of every country in the world is to provide people with the best healthcare in both quality and quantity. Emergency Medical Service (EMS) is a very significant side of healthcare. With the characteristics of time critical, emergency healthcare quality can be affected badly by unnecessary delay. Thus, this project was created with a motivation - reducing the time response delay in EMS 9-1-1 communcation system.

The goal for this project was to study all aspects of the EMS 9-1-1 communication process, including response time, call procedures, and parties involved. By learning about these aspects, existing flaws in the system could be identified and improved. Another goal was to investigate many varieties of technology that can be integrated into 9-1-1 call structures. Furthermore, the project also included research about emergency 9-1-1 call systems of different U.S. States that have advanced medical systems. With the information obtained from new technology and superior systems, solutions for existing flaws inside 9-1-1 call system were chosen based on creative and practical basis. Ultimately, the outcome of this project was to provide a more efficient way of making emergency 9-1-1 calls.

This report consisted of four chapters, including this first chapter. Chapter 1 was the general introduction about the importance of EMS systems and its response time, motivation for researching and analyzing the 9-1-1 system as well as the goals for the project. Chapter 2 talked

about many aspects of the 9-1-1 structure including how a 9-1-1 call was made, how data was classified and stored, and the parties involved in this process. Additionally, the project discussed about potential current and future technology that can be used to improve the 9-1-1 structure as well as alleviate response time delay. Chapter 3 talked about the selecting and combining of technologies and features the team had researched and incorporating those technologies into a product that can satisfy the objective of reducing EMS response time. Chapter 4 was a conclusion of the entire project as well as outlining possibilities for future continuation.

CHAPTER 2: EMS 9-1-1 SYSTEM AND ITS CHARACTERISTICS

2. Introduction

In order to be able to archive ultimate goal of reducing the time response of 9-1-1 call, we had to understand deeply the system itself. For this purpose, we spended earlier portion of the project to find useful information about EMS 9-1-1 call system as well as technology that can be incorporated in the system. This chapter consisted of all background researches that had been conducted to understand more about EMS 9-1-1 communcation system. The researches ranged from history of 9-1-1 communcation to existing laws and standards of the system. With those knowledge, a clearer insight of the EMS 9-1-1 communcation system was established.

2.1 Emergency 9-1-1 Communication

In this section we explored the areas concerning 9-1-1 Communication system including history, procedures, and methodologies, etc. This would not only help us understand deeper on how 9-1-1 call system works but also give us a broader picture of the whole system and what could be improved upon. Also, it provided a better view of possible existing flaws of 9-1-1 EMS communcation and initiated ideas for solutions.

2.1.1 History of emergency phone calls

The first universal emergency telephone number was created in England because of a fire that occurred in November of 1935. A common method of reporting emergencies at that time was to dial the telephone operator and asked to be connected to the appropriate first responder: Fire, Police, or Ambulances services. In the case of the 1935 fire, phone calls for help could not go through to the operator because of the large volume of people calling the operator simultaneously. Not all of the calls during the time were necessarily reporting the emergency. As a result of the inability to communicate effectively with the operator and emergency responders,

five women were killed in the fire time. After the incident in Engalnd, it was brought to the attention of the local newspaper by one of the frustrated callers in the form of a letter to the Editor. This letter to the editor sparked the British government to look further into the matter. It became clear that a single, dedicated, telephone line was needed for citizens to contact emergency services. Two years later, the initial test of the universal system was put in place within a small area of London. Citizens were advised only to use the number in an absolute emergency. The system was first used when a woman called to report a man who was lurking around outside her home, who she suspected of burglarizing houses in the area. The man was caught and arrested shortly thereafter (K. Moore). The number chosen for the emergency number was '999'. This was because the telephones at the time were rotary dial style phones; Public telephones at the time could be easily modified to allow use of the 9 and 0 buttons without forcing the person to pay fees for the phone call (K. Moore). It was also noted, coincidentily, that in dark or poorly lit environments the 9 digit could easily be found by pressing the number one slot away from the dial stop, as shown on a 1930's era phone in Figure 1.

Figure 1 Phone in the 1930's

In America the year of 1957, there was a big push for a single emergency telephone number by the National Association of Fire Chiefs for reporting fires. In 1967 the President's Commission on Law Enforcement and Administration of Justice advised that a single phone number should be created and recognized across the United States that citizens could contact emergency services quickly and directly. The FCC was tasked with organizing the system and turned to AT&T to engineer a solution. In 1968, AT&T created an emergency number which had a similarity to other three digit numbers that were in place: 2-1-1 was used for long distance calls, 4-1-1 was used for directory assistance, and 6-1-1 was used for repair service. The number chosen was 9-1-1. The choice was quite logical because the two different digits were at opposite ends of the telephone, which helps to prevent accidental dialing (Allen).

Shortly after it was announced in the Wall Street Journal in early 1968, the president of the Alabama Telephone Company, Bob Gallagher, decided that he was going to beat AT&T to implement the 9-1-1 emergency system. Gallagher contacted Robert Fitzgerald, a Plant Manager for the company, looking for advice where he could set up the system. Fitzgerald suggested Haleyville, Alabama. Gallagher announced that Haleyville would have 9-1-1 service beginning in February of 1968 – just a month after AT&T announced their 9-1-1 service (The History of 911 Emergency Calls).

Gallagher designed the circuitry for the system, and with the help of several technicians they implemented the first 9-1-1 system in the United States. On February 16, 1968 the first call was made from the City Hall to the local police station (Allen) (The History of 911 Emergency Calls). Figure 2 was a picture of Bob Gallagher and Robert Fitzgerald, two biggest figures in history of 9-1-1 communcation system.

Figure 2 Bob Gallagher (left) and Robert Fitzgerald (right) (The History of 911 Emergency Calls)

Although the first service went into place in 1968, it did not become widely recognized until a period in the 1970's. And even then, many places did not have service until the 1980's (The History of 911 Emergency Calls).

2.1.2 How 9-1-1 classify/process a call

Today, people contacted to 9-1-1 Centre through communication means which were landline, broadband, VoIP or cellular/wireless phone. Call taking process was quietly the same either by using landline, broadband or cellular/wireless phone. However, there was major differences between landline and cellular that had to be concerned whenever classifying a call made by these communications. By learning about this, we could have a better view to the structure of 9-1-1 communcation system.

2.1.Landline or broadband

When a person dialed 9-1-1 using landline or broadband for emergency service, the call taker was able to see the caller's telephone number, name and location information which was displayed on the monitor. The call taker initially asked for the address of emergency in order to verify the information provided through the automatic location information technology

transmitted by the telephone service provider. After verifying that the address was the same as the information showed on the screen, the call taker asked for a description of the emergency, and then collected information based on the appropriate emergency service Emergency Medical Dispatch (EMD), Emergency Police Dispatch (EPD) or Emergency Fire Dispatch (EFP). When all basic questions were answered and the appropriate information were known, the call taker asked further information in order to acquire, process and transmit more detailed information between the caller and the responding Police, Fire and EMS personnel. During the first five to ten minutes of an emergency, the safety sensitive employees stayed on the phone with the caller to provide temporary emergency medical instructions until the responding personnel come. The sooner the questions were answered, the shorter the time response would be (Prince Georges County).

The information gathered by the call taker was entered into Computer Aided Dispatch (CAD) system where integrated all emergency incidents. Depending on the incident type, the call for service would be routed to the appropriate dispatcher for processing. As the information was being gathered, it was entered into the CAD system and the dispatcher passed the information on to the first responders. However, according to the caller necessity, the call taker entered different codes into the CAD. For instance, if the call for service was both law enforcement and Fire/EMS emergency responders, the call taker entered a "Combined Call" and the CAD generated two separate incident numbers. Both incident numbers was routed to the appropriate Police and Fire/EMS dispatcher. While updating data from the caller to both the law enforcement and Fire/EMS incident information in the CAD, the caller was assisted by providing pre-arrival instruction and life-saving information from the call taker. Once the call for service was displayed on the dispatcher's status monitor, the CAD system recommend units to respond to the

emergency, based on unit availability and the area the unit was assigned to (Prince Georges County).

Cellular/Wireless Calls

The call taking and the dispatch process by receiving 9-1-1 call through cellular was similar to one discussed above. However, FCC classified cellphone into two types: Phase One and Phase Two. Phase One cellphone provider kept track and reported the location of the PSAP, while Phase Two cellphone provider could track down to the loction of the user. Therefore, call taker can keep track on the location of the caller only if the wireless telephone and wireless company were FCC Phase Two compliant, otherwise it cannot be obtained. So if the wireless telephone was FCC Phase Two compliant, the call taker received approximate latitude and longitude of the caller's address and then it was converted to a map location by mapping software installed in the CAD system. Moreover, Phase Two technology helps the 9-1-1 Center to map the caller's address within about 300 feet. Thus, call taker can locate the caller's position in the case that caller was unable to provide the location clearly or unaware of their location (Prince Georges County).

9-1-1 Communication Flow Diagram

As 9-1-1 calls were executed, regarding to a medical emergency, the caller taker dispatched an ambulance with other emergency services. Each region, even in the same state, had different dispatch ambulances. For instance, when a person from Worcester dialed 9-1-1 for emergency service, the call was routed to Framingham and then transferred to Worcester Police Department. After that, the Worcester Police Department asked the third party companies provided by UMass Memorial Hospital for available ambulance. Once the third party company received the call, it ordered an ambulance to pick up the patient. As soon as the ambulance

arrived the patient's location, it then requested patient's conditions in order to classify the patient's priority, based on three scales: level one, level two and level three. Priority level one was urgent and life threatening. Priority level two was serious or potentially life threatening. Priority level three was non-life threatening illness or injury. After determining what priority level for patient was, the ambulance transmitted to CMED who communicate to a hospital through a dedicated channel. When finding an appropriate hospital for the service, the ambulance sent all required information which was gathered from patient such as name, age, sex, condition to the CMED. Finally, CMED again passed the information to the hospital so that the hospital can prepare for the incoming patient. The diagram below(Figure 3) summarizes the follow of 9-1-1 communication when a call was made.

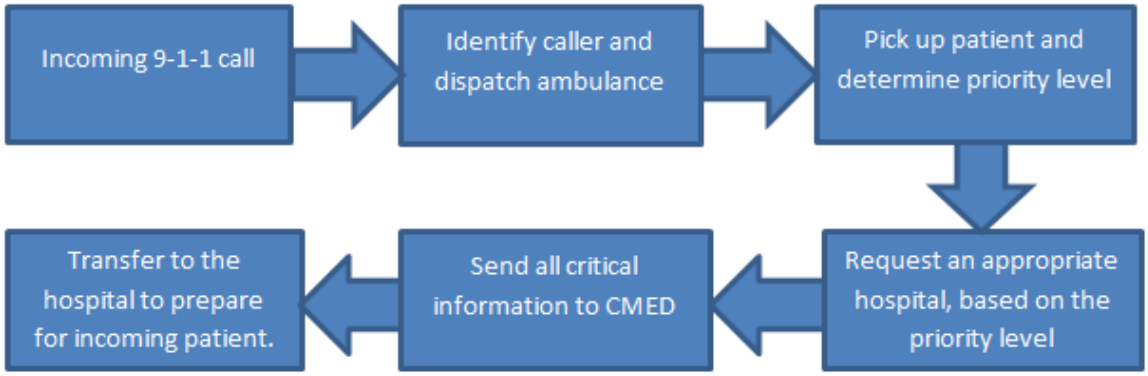

Figure 3 Flow chart of 9-1-1 system when a call was made

2.2 Next Generation 9-1-1 (NG9-1-1)

Next Generation 9-1-1 was an improved system of the current 9-1-1 system. The improvement was made mainly upon integrate 9-1-1 call system into wireless mobile technology, enable callers have more functionalities when calling emergency service like text, data, video calls, etc. In this section, we investigated this innovative method of 9-1-1 system.

2.2.1 NG9-1-1: Early Plans

In 2009 the ICO put forth a plan to implement the IP enabled 9-1-1 system. They presented a time line of 9-1-1 histories and show their future goal of implementation. According to the ICO the deficiencies for the current system in 2009 were: the call centers were ill equipped to handle VoIP calls as well as receive different types of communication from wireless phones. This was seen as a potential barrier for improving 9-1-1 communications. The mobile phones brought a need to meet geographical location and callback needs. The technology world continues to move forward while the 9-1-1 call centers and PSAPs struggle to keep up. At the time there were still some PSAPs that had not upgraded even the FCC had put forth legislation which was supposed to force outdated centers to upgrade their technologies. The current technology was created by the American Telephone & Telegraph Company. This system was considered analogue with various assortments of switches and circuits. The goal was to digitize that system. The last thing mentioned was the lack of accessibility for the disabled to reach 9-1-1 services. There was an increase in technology for the hearing and speech impaired but had yet to reach the 9-1-1 system. He report then delves into the extensive initiative put forth by the group known as U.S. DOT on the development of NG9-1-1. That initiate centered on the information related to an emergency would be better, quicker, more reliable, and more efficient. All of this information was meant to aid in the migration plans. The rest of this document refers to the goals that they were meant to fulfill as well as the approach to solving each foreseeable problem. Part of this literary background also focuses on IP also known as internet protocol. This was a means of communication that devices use over the internet. The purpose of the IP was explained in the next paragraph (Next Generation 9-1-1 Transition Policy Implementation Handbook).

2.2.2 NG9-1-1: Next Generation 9-1-1

Next generation 9-1-1 formally known as NG9-1-1 was a part of an initiative to improve current system of 9-1-1 by means of using new technology as well as current technology. The main focus of this effort was on the possible transaction to a mobile broadband IP enabled system. The most recent bill signed on NG9-1-1 was a part of the middle class tax of 2011. The bill was put forth to give further direction on the NG9-1-1 project. In 2008 an organization called Kimball put forth a proposal of how it could work per request of the NASNA (National Association of State 9-1-1 Administrators). The United States department of transportation (USDOT) assessed as though this was going to be a system of systems working together on a local and regional level. Each network was projected to include at least on PSAP and vary based on need. The other efforts of NG9-1-1 focus on coordination and on improving how information was relayed from place to place to positively impact emergency response. The concept of sharing information and improved connectivity was projected to go beyond public safety. The idea was that schools, hospitals, National Guard, department of defense, public works, media, etc. all shared a common bond to improve emergency services. The basis was on the idea that the more places that were aware of what was going on the better the system be. Figure 4 was what the early USDOT projected NG9-1-1 system was intended to be (Yardley).

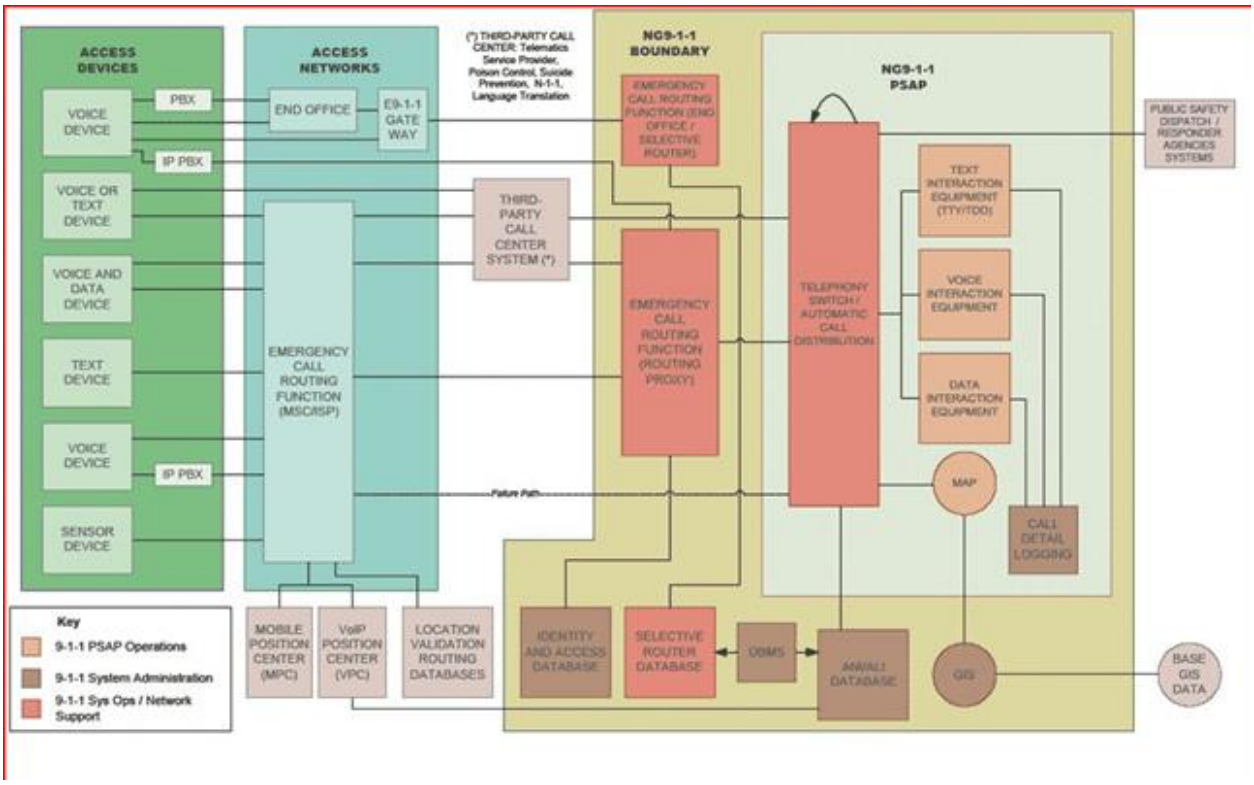

Figure 4 NG9-1-1 Boundary layout (Intelligent Transportation Systems)

The system here broke down into Access devices, access networks, third party call system centers, NG9-1-1 Boundaries with NG9-1-1 PSAP inside, and ultimately led to public safety dispatch. This was the theory on how it could work. The early NENA model on NG9-1-1 could be found in Figure 5.

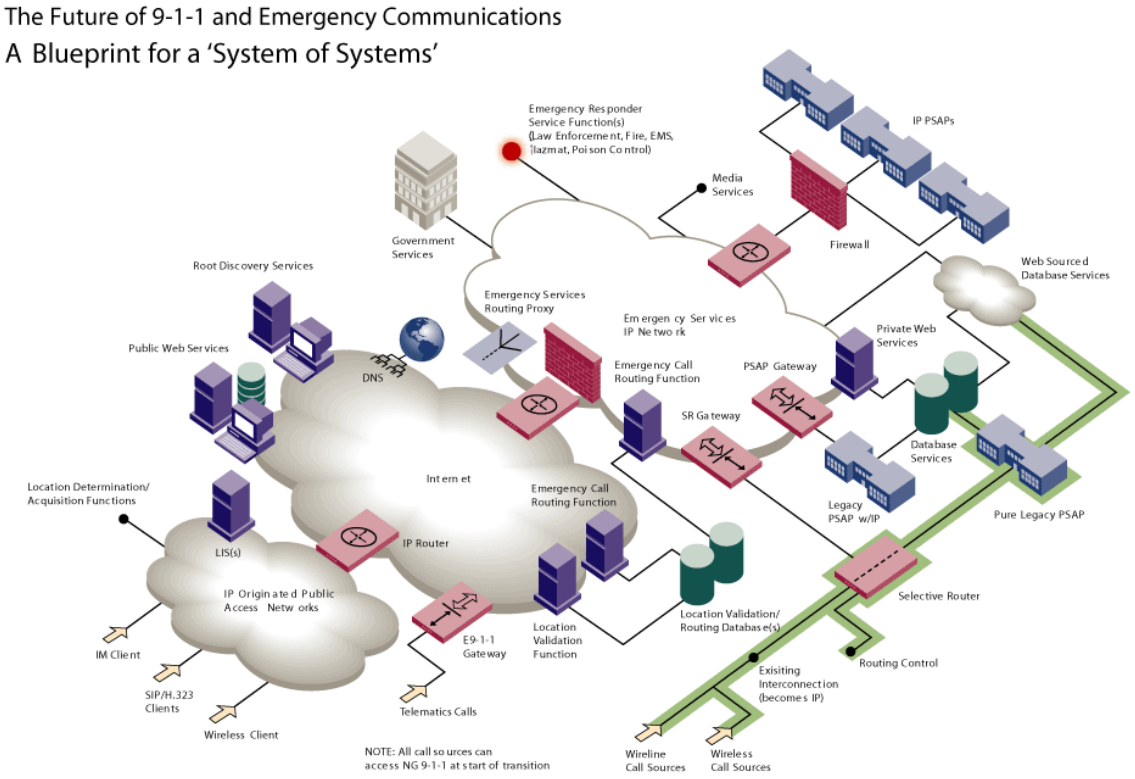

Figure 5 NG9-1-1 diagram (NENA Generic E9-1-1 Requirement Technical Information Document)

NENA presented a model of a future systems of systems. This system was made up of public IP access networks, the internet, an emergency IP network connected to government services that can ultimately pass on to a firewall before reaching the IP PSASs. The models were fairly dated but laid a framework for thinking how a state might deal with the implementation of NG9-1-1 services. There would have to be improvements made on ability to access the IP enabled networks as well as an improved connection between PSAPs. Different locations used different technologies. In Massachusetts each 9-1-1 call center shared at least one line that connects to the Massachusetts government for recording data. This document believed that each

operation should be mastered on a state level as needs vary before one could consider a national level. This document was released in 2008 with some preplanning of how these operations could work. This was something that be well thought out and implemented as logically needed and legally sound. In 2011 NENA released the next generation 9-1-1 transition policy implementation handbook. This handbook was specifically made for Colorado in the form of a checklist for to ensure the feasibility of the implementation. Some of the questions it posed were leadership and coordination, funding, legislation, how the state would run on a collective system, privacy, and liability. The Public safety and homeland security bureau sent comments on January 14, 2013 to the FCC to discuss the legal and statutory framework. Figure 6 was the breakdown of systems as described in the handbook (Piett).

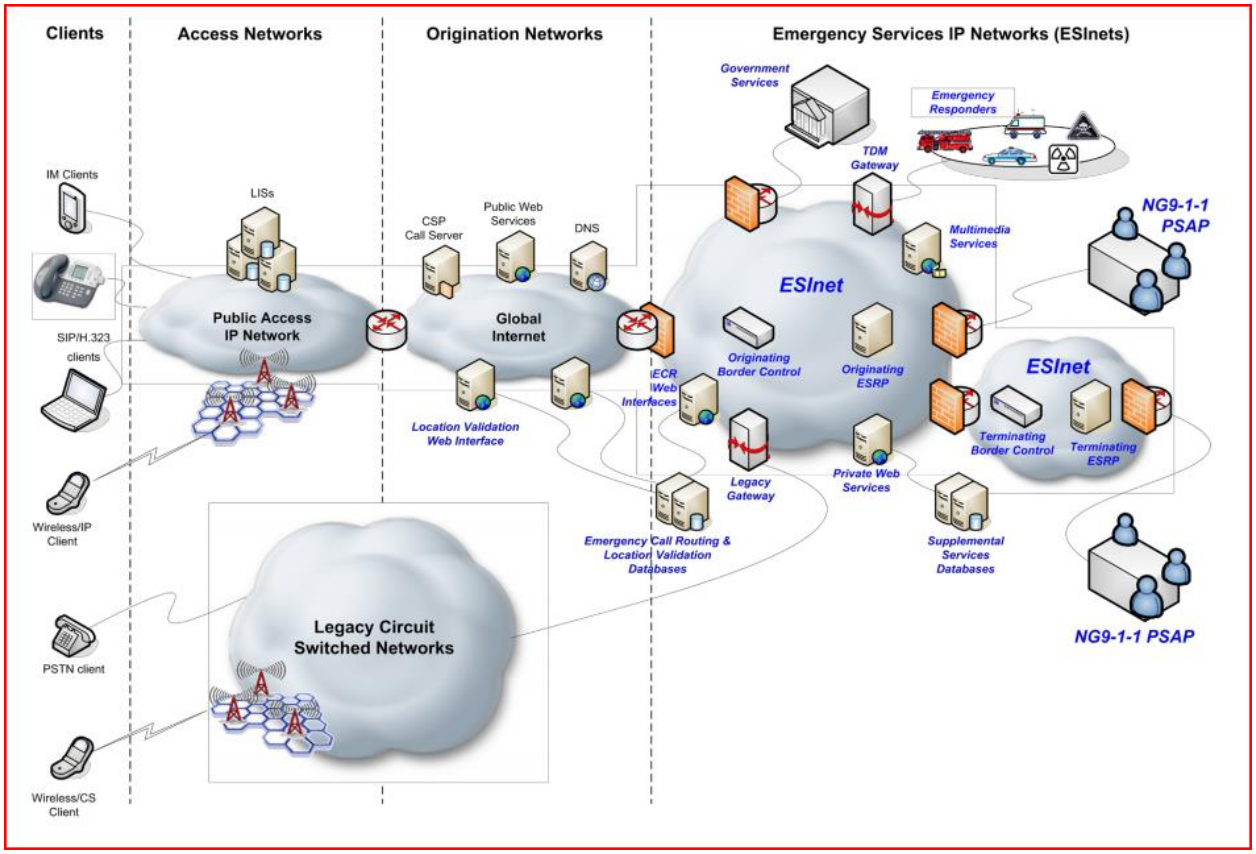

Figure 6 NG9-1-1 system breakdown (Piett)

2.2.3 Trip to Worcester police department: Opinion about NG9-1-1 from emergency personnel

In November, 2012, our group had given an opportunity to visit Worcester police department and talk with their personnel as well as ask question about current situation with emergency call system. In the trip to the Worcester police department, the team learned how one of the 9-1-1 call centers in Worcester operates. The gentleman in charge of the operation took some time to show us around as well as sit down with us to explain what goes on and what kind of technologies they have, and answers a few questions. On the subject of Next Generation 9-1-1 he gave us his take on it. Seeing as he in charge of this operation we valued his opinion as he would be directly affected by the implementation of our proposed solution. He believed that an IP phone system would be a great redundancy but acknowledged that the power failed for long periods of time the number one method people use was cell phones. He foresaw a problem with updates based on privacy laws and cost. He mentioned that the number one thing he would like to see on NG9-1-1 implementation was scalability. Calls would go to a central IP central PSAP station before they received the calls to free up lines and cut down on the same emergencies that were reported. He endorsed the idea of Smart9-1-1 which involves the subscriber supplying their vital information to this site so that when you call them they can see all of your important information. It also helped because the subscriber was responsible for the updating of information. He somewhat shot down the idea of receiving texts and photos because of privacy laws as well as the nature of the job. The call takers would be opposed to viewing these items. He did endorse sending along those items to the EMTs and police. On the text messages he foreswa autocorrect as a big problem that could lead to confusion and time wasted. From his experience he felt that whenever a new technology comes about it was governed by a set of standards and that the legislation tends to follow that technology standard. One of our many focal

points dealed with delay. In this meeting we felt collectively that some delays could be cut down with proper education on the use of 9-1-1 but he felt like that would be a waste of time and energy. Despite some of his own efforts to educate people on the proper use of 9-1-1 they still receive many non-emergency calls which bring about the discussion of alternatives of 9-1-1 for non-emergency purpose in next section.

2.3 Alternatives for 9-1-1 Communication system

Although 9-1-1 Communication system was established as a system for civilians to report for emergency situations like accident or fire, many of the time 9-1-1 was used for other non-emergency purposes. This can lead to an overload in the 9-1-1 line, thus, making the whole system inefficient. In this section we talked about the existing alternatives for 9-1-1 system.

2.3.1 Information line 2-1-1

2-1-1 was an alternative to 9-1-1 as a referral and community information line. This was known as a citizen activated call line because the callers were individuals seeking assistance for emergencies. This line was especially useful for community warnings such as natural disasters. The other alternative to the 2-1-1 line was the 3-1-1 line created to take nonemergency calls to free up the 9-1-1 call center queue. As time had progressed the country has tried to improve this service. September 11, 2001 there was a massive amount of calls but there was a lack of coordination. after hurricane Katrina the 2-1-1 system was really helpful in referring families to shelters and helped push 2-1-1 forward as a great source of information for a disaster and was recommend by FEMA(Federal Emergency management agency). 2-1-1 system had also helped to organize donors and volunteers. 2-1-1 had also been used for support in long term recovery scenarios. 2-1-1 also served useful for social services like prevention of suicide, patent support,

counseling, and housing assistance. Figure 7 was a map created by the united way to illustrate the coverage of 2-1-1 across the united states (Greater Twin Cities - United Way).

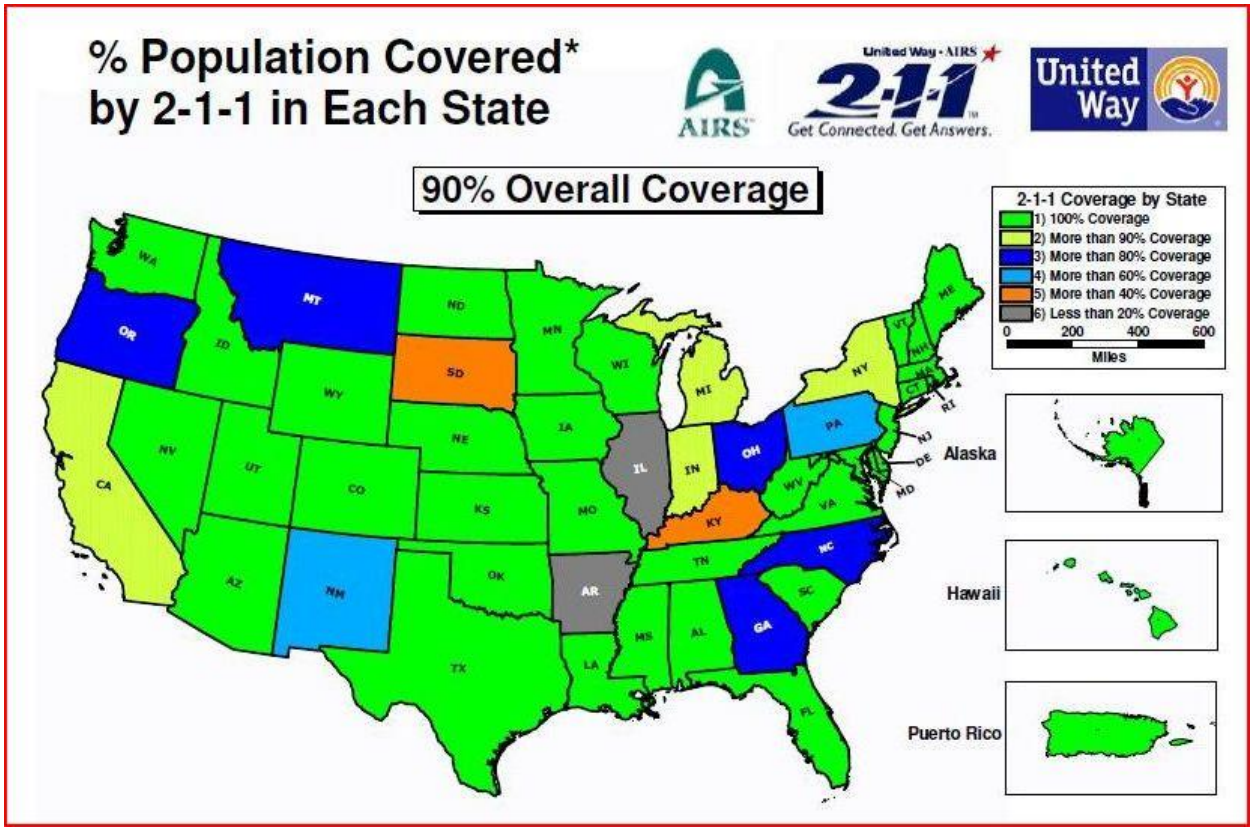

Figure 7 Distribution of 2-1-1 service around United States (United Way - AIRS 2-1-1)

2.3.2 Non-emergency line 3-1-1

3-1-1 was a 3 digit non-emergency line designed to free the 9-1-1 emergency kinds from non-emergency calls to cut down on delays. This was first attempted in Baltimore, Maryland back in 1996. A year later it was given the green light by the FCC for use for all states. This was an attempt to free up their emergency services line. When they decided to look at the amount of actual emergencies they handled it was discovered that more than half of their call were non-emergencies. This proved an effective means of cutting down delays for those whose desperately need 9-1-1. That was not to say that the 3-1-1 line only get non-emergency call. They sometimes received emergency calls and each 3-1-1 center has different means of handling those calls such

as getting in contact with 9-1-1, sometimes they ware trained for those situations, and sometimes there were 9-1-1 call dispatcher's in the same vicinity that refer the patients to the appropriate location. The 3-1-1 calls were linked, in some cases, directly to the police stations. They can also be directly controlled by the city. Overall they were taken as nonpublic safety answering personnel. The 2-1-1 and 3-1-1 call centers would benefit from a centralized PSAP that filters the calls from place to place based on emergency, non-emergency, and location. These call centers would begin to weave out calls that really belong to another area (MC311). Figure 8 was a map showing where 3-1-1 was available. By comparison there was more coverage on the 2-1-1 map.

Figure 8 Distribution of 3-1-1 service around United States (MC311)

2.3.3 Voice over Internet Protocol (VoIP)

VoIP standed for Voice over Internet Protocol, which was sometimes referred to as IP telephony or a converged voice network. VoIP was widely used to provide telephone service. Unlikely traditional telephone service, VoIP was provided on a standard IP data network such as

UCInet. Actually, VoIP services converted caller's voice into digital signals then transfer it over Internet to the final destination. In other words, VoIP allowed caller to use computer, a special VoIP phone, or a traditional phone connected to deliver the message to a special adapter. As a result, anywhere that Wi-Fi was available such as airports, parks and cafes, citizens were able to use VoIP service wirelessly (Federal Communication Commission). Figure 9 was a diagram explained how VoIP works.

Figure 9 VoIP communcation system diagram (Federal Communication Commission)

Nowadays, VoIP was provided by different provider with different services. Some VoIP suppliers provided their services for free, normally only for calls to other subscribers to the service. Thus the charging fee depended on both the suppliers and the distance that a call was made. However, when choosing VoIP service to use, residents had to concern about the availability of 9-1-1 services with the provider. For instance, Skype were one of VoIP providers but it does not offer 9-1-1 services since it cannot provide the user's current location. On the

other hands, Callcentric was another VoIP provider that has been provided 9-1-1 services across the 50 US State, Canada and Puerto Rico. Callcentric 9-1-1 Dialing service worked differently than traditional 9-1-1, it required users to enter their address where they use the Callcentric service whenever purchasing a rate plan or phone number. Most customers had access either basic 9-1-1 or Enhanced 9-1-1 (E9-1-1) service. Basic 9-1-1 service was a forwarding arrangement that when a call dials 9-1-1, it was automatically transmitted from the service provider's switch to appropriate PSAP, usually over dedicated emergency trunks. Basic 9-1-1 did not have caller's position, but simply forwarded all 9-1-1 calls to the appropriate PSAP or public safety agency. With basic 9-1-1, the local emergency operator answering the call did not have callers' information such as call back number or even their location. As a result, whenever a call was made, callers must prepare to give their information. The call takers may not be able to call back or dispatch help if the call was incomplete until they gather all required information. On the other hand, E9-1-1 service "route 9-1-1 calls through the use of a Selective Router to a geographically appropriate PSAP based on the callers' location". With E9-1-1, the call taker would be provided callers call back number, referred to as Automatic Numbering Information (ANI), and location information, referred to as Automatic Location Identification (ALI). Therefore, since additional local emergency centers were able to receive callers' information, Callcentric's service provider automatically upgrade customers with basic 9-1-1 to E9-1-1 service without notification. However if a call failed to be sent to local emergency operator, it was then automatically forwarded to a national emergency center. In these cases, a trained agent at the emergency call center asked callers' information including their name, phone number and location, and then contacted the local emergency center for such customers to send help. Generally, VoIP today had become one of the fastest, most convenient and reliable ways to dial

9-1-1 whenever needed as the number of call made by VoIP increased dramatically 220 to 5181, corresponding from 2008 to 2011 (2011 Vital Statistics).

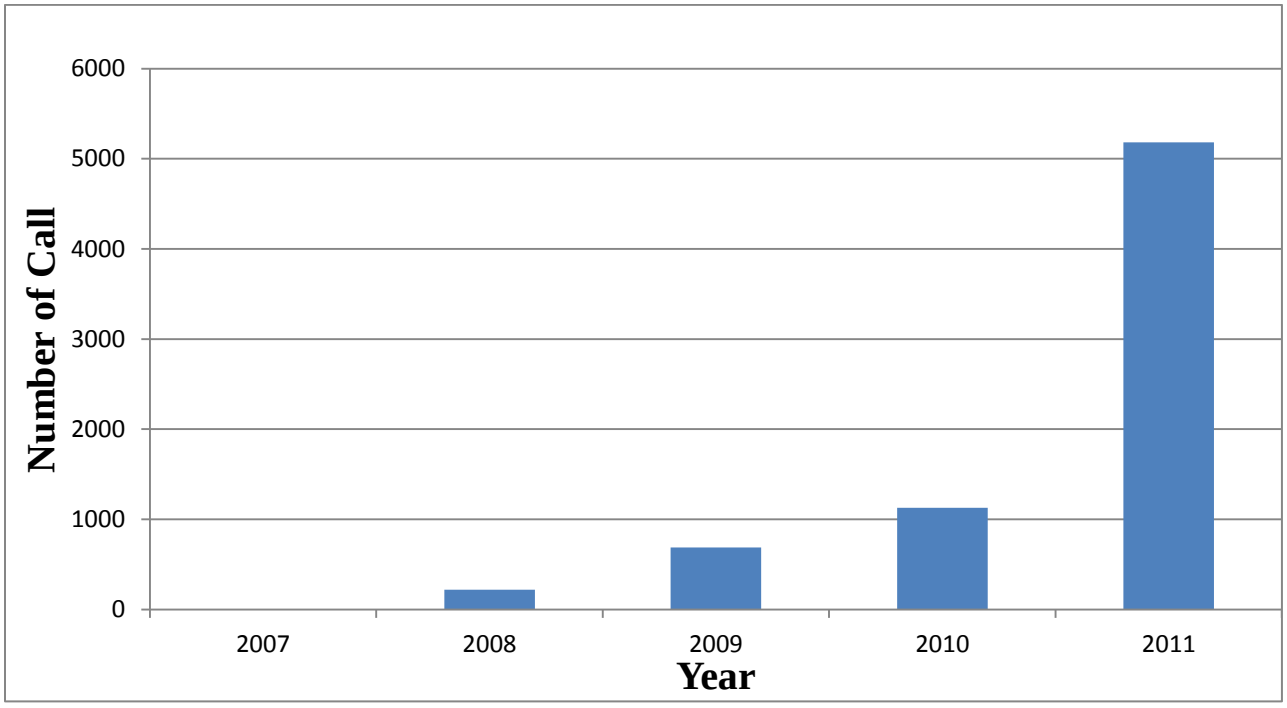

Figure 10 VoIP 9-1-1 volume (2011 Vital Statistics)

2.3.4 SMART 9-1-1

Cellular and landline were currently widely used to communicate to 9-1-1 Center. However, these communications still had several vulnerabilities. In fact there were some cases that the call taker misunderstood the callers due to language difference or pronunciation problem. In addition, if both of these communication systems failed due to catastrophe such flood, storms, hurricane; it might be not able to find a way to connect 9-1-1 center. Therefore, there must be somehow that can help citizens to reach 9-1-1 whenever needed.

Smart9-1-1, a national safety database, allowed citizens in United States to create a Safety Profile by entering information online through its website. The information can be added as much as wanted. Once created, whenever a resident places 9-1-1 call, their safety profile

immediately be showed to the call taker and by this way, it definitely be better to allow the call taker to understand caller's situation and respond quicker and more effectively. The profile was only shared with local Police, Fire, and EMS when only dialing 9-1-1. For instance, everything from a record of heart attack to "mild Alzheimer's" or psychiatric condition can help paramedics respond better. Additionally, Smart9-1-1 also had professional staffs that deal with unusual groups such as deaf in order to communicate during an emergency (SMART 9-1-1)

Figure 11 Information input of SMART9-1-1 (SMART 9-1-1)

Additionally, many wireless phones would not give a specific location when dialing 9-1-1. With Smart9-1-1, residents can input a specific home address or any wanted location to their profile information. This step was easily implements by logging on to www.smart9-1-1.com. Profile can include all family members and their photos or individual's photo, medical information or conditions, disabilities, home details, vehicle information or even pets'

information. Residents can also describe the layout of their house, their car or anything they want. By adding the information, it was critically help police a timely advantage in any urgent or difficult incidents. For instance, an event of missing child, Smart9-1-1 showed high quality photo of the missing child then issue an Amber Alert and forward the photo to field officers immediately after the call along with the child's last known location. Or an event of a disabled or confused caller, the caller can't speak or remember his address, the call taker was still able to effectively dispatch help according to the profile uploaded by him (SMART 9-1-1).

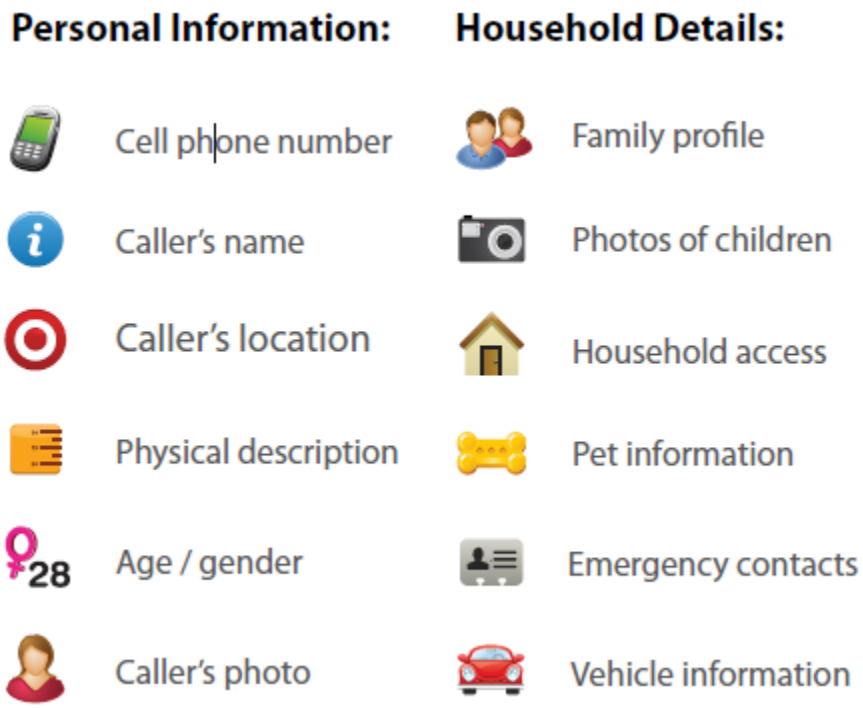

Figure 12 More information input of SMART9-1-1 (SMART 9-1-1)

The Safety Profile was perfectly secured privately and updated citizens' profile every six months. As private data had significant role in Smart9-1-1, it operates the latest in data security measure to protect resident information. Besides, the communication between PSAP and the Smart9-1-1 database was also protected whenever Smart9-1-1 was carried out. As a result, Smart

9-1-1 was created with high reliable and redundant for emergency operations. The hosted components had to be redundant, secure, and geographically dispersed data centers across the United States.

Briefly, Smart9-1-1, nationwide service, highly gave citizens the ability to be proactive about their family's safety. Complement with existing communications, Smart9-1-1 absolutely was a way to improve current 9-1-1 response better and fill in the current gap (SMART 9-1-1).

2.4 Central Medical Emergency Direction (CMED)

CMED standed for Central Medical Emergency Direction which was established in Massachusetts in 1970s. The purpose of CMED was basically to control the EMS system better for the entire state as each city has their own emergency service. For instance, emergency service in Worcester operated with police department while Boston Emergency Service worked with fire department. Additionally, the ambulance services were different among cities. For instance, Millbury use third party companies such as UMASS for the usage of ambulance while Natick use public ambulances. Briefly, the function of CMED was an intermediary that assisted connection between ambulances and hospitals in its designated region in order to retain a clear procedure for EMS communication and alleviate frequency congestion through channels. The CMED in Massachusetts was classified into 5 regions as shown in Figure 13 and each region was provided UHF and VHF channel to both afford sufficient coverage for the entire area and maximize the available frequencies.

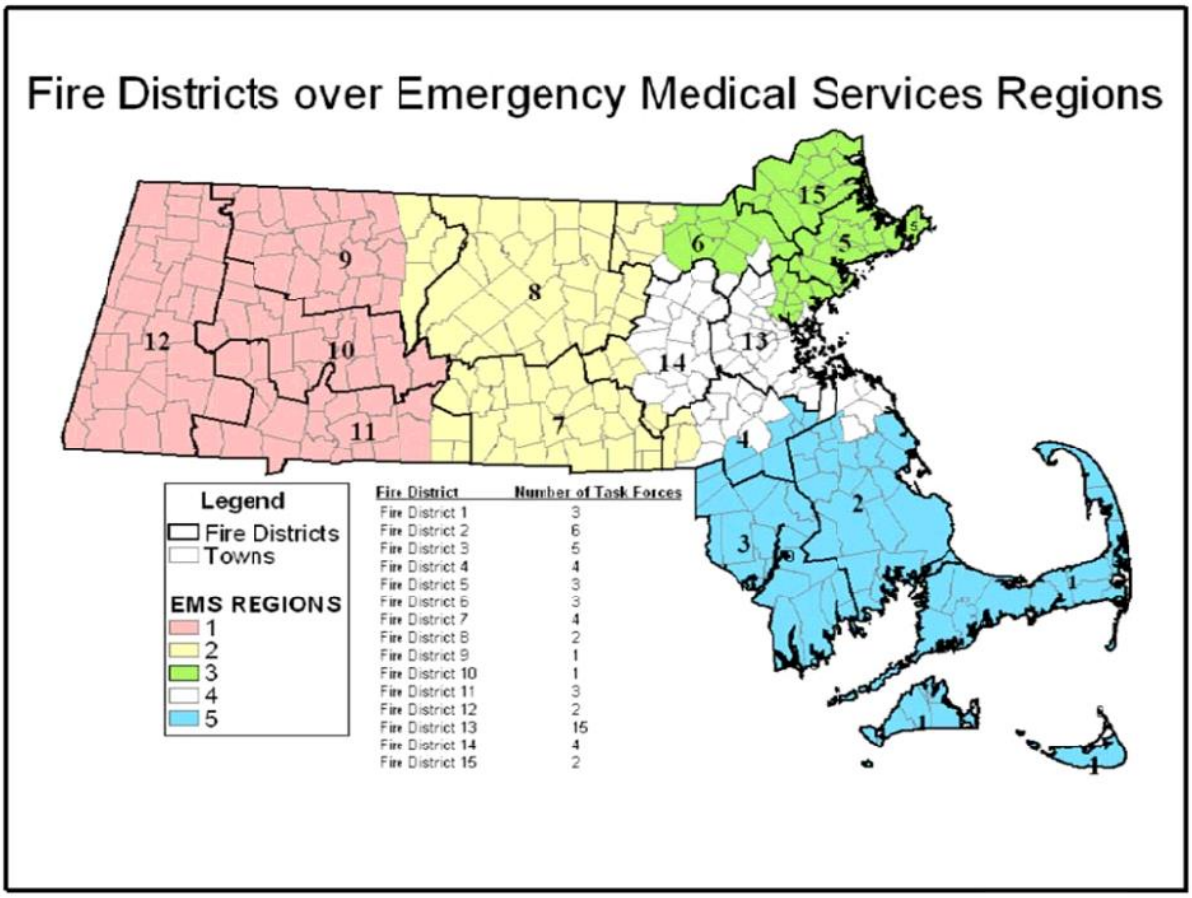

Figure 13 CMED regions in Massachusetts

In Boston region, CMED was only received of priority level one patients since it increase the range of available frequencies to ease the high volume of calls. On the other hands in region II, it required all priority levels to be delivered through CMED before being sent to the hospital. Once the priority level was determined, the ambulance looks for an appropriate hospital so that it's connected to a hospital through CMED. The hospital was chosen based on several factors such as patient's condition or priority level, the current location of the ambulance and maybe the patient's personal preference. The patient's condition and priority level plays an important role in determining an appropriate hospital since all hospitals probably not meet the demand of required treatment. Furthermore, the

current location of the ambulance was also significantly importance since the closer the hospital was, the faster the patient be treated and the better chance of saving patient be. Generally, CMED was essential key to deal with massive casualty incident. Its responsibility was to connect between ambulance and hospitals through a dedicated channel. Additionally, its function was to locate the closet and appropriate hospitals within its region as well as those in neighboring region for patients. With CMED, EMS in Massachusetts has gradually increased the relief to the citizens.

2.5 Standards of 9-1-1 Communication system

In this section we studied about the standards of 9-1-1 communication system including law, leigislation and models of 9-1-1 communication system around the world. The information from those researches would assist us with general idea on what could be improved in 9-1-1 communcation system. This was a step to reach our goal to come up with solutions that reduce response time delay.

2.5.1 Liability and Law

The Massachusetts department of public health had within it the office of emergency medical services. This office had provided the laws and regulations to the public through the official Massachusetts website. The Wireless Communication and Public Safety Act of 1999 was the first major act passed to improve 9-1-1. It was referred to as the 9-1-1 act mainly because it deemed 9-1-1 as the official emergency number to be used across the country. The FCC held the responsibility of making 9-1-1 the universally accepted number for emergency services and creating a system that improved the nations EMS infrastructure. The next major act of was the Ensuring Needed Help Arrives Near Callers Employing 9-1-1 Act of 2004. This act was known as the E9-1-1 act designed to incorporate location services on cell phones when a user needs 9-1-

1 and was calling on a wireless device. There was the Homeland Security Act of 2007 that was put forth to have the FCC create a report to that would discuss a backup plan in the event Enhanced 9-1-1 and PSAP's were disabled. This plan was designed on the many levels of our countries infrastructure. The NET 9-1-1 improvement act of 2008 called for the ICO (Implementation coordination office) to put forth a plan for a movement to an IP enabled emergency network to improve information sharing to also emergency networks as well as the people who call on emergency services. The responsibilities of those involved were to create this plan within 270 days leading to April of 2009. Some of the provision for this plan include but were not limited to: provide mechanisms to ensure that IP enabled emergency networks were available to every community and were coordinated on local, state, and regional level. Identify location technology for nomadic devices and for office building and multi-unit dwellings. Identify solution for those with disabilities and the steps to be taken to develop a timeline for action. They also wished to analyze what there were doing to provide location information and relay recommendation for changes on regulation as well as legislation. The previous provision dealt with equal access to this new system. Figure 14 brokedown the states that have E9-1-1 legislation in light blue, the states that have pending legislation in dark green, and the states that have no legislation in light green.

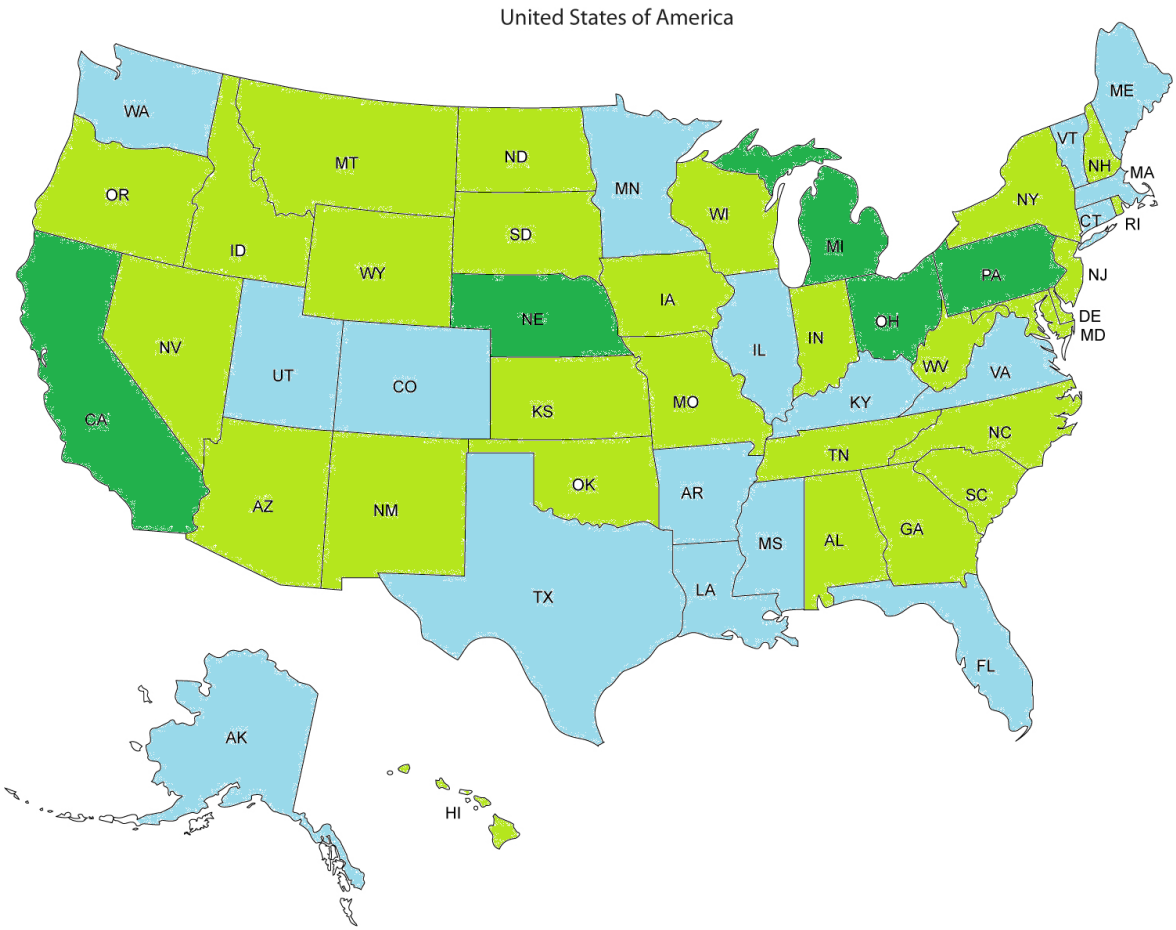

Figure 14 Legislation availability around United States

Health Insurance Portability and Accountability (HIPAA)

HIPAA stands for Health Insurance Portability and Accountability Act of 1996 also known as the privacy rule to the health care industry. This act was put in place to limit the amount of personal information exchanged for one party to another through word of mouth, phone, video, mail, and all forms of communication. This rule also applies to situations involving medical records information being searched by family, friends, and coworkers without consent. In some cases you can't access your own information as it can relate to tampering. The privacy rule was mainly for health care providers, insurance companies, and health care clearing houses or facilities that process "non-standard information." This act was meant to protect "all individually identifiable health information." Contained, obtained, and released by way of

electronic means or any no electronic means. The information protected was not limited to medical. The patients living arrangements and money received for health care was also covered. Removal of information found from research that could lead to a particular patient's medical information was not covered. The law aims to differentiate when it was acceptable to relay someone's personal medical history. The law goes into more depth online. Figure 15 below gives a time on the privacy rule known as HIPAA and it issuses the american recovery act.

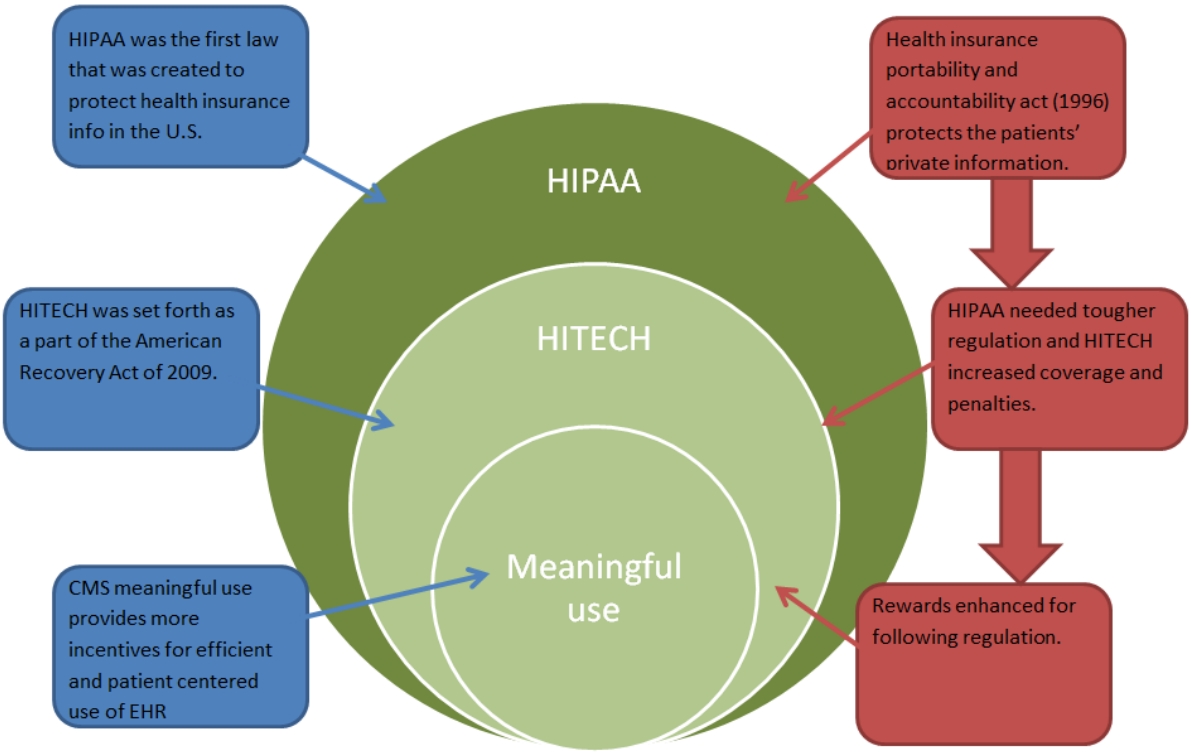

Figure 15 Health Insurance Portability and Accountability Act

The focus was on how these privacy rules affect the development of NG9-1-1 and how they must be observed as to protect patient confidentiality. In the next section there was a look into the NG9-1-1 system and its proposed community models.

Federal Communication commission (FCC)

The FCC or federal communication commission was the government level agency that focuses on the laws and regulations surround any form of electronic public communications. They oversee the countries emergency communication systems. After the 9/11 attacks and the devastating hurricane Katrina the FCC has focused on making sure in the event of tragedy and disaster we were able to still communicate. Power was always the biggest factor in most of the communication that was available. For outages in power and wireless and wire line networks the FCC created the Disaster Information Reporting System (DIRS) that acts as a resource for informing those that were affected. Their three main components break down into the 9-1-1 call that were processed by the PSAP's, the emergency alert system, the radio, television, and news to inform the public of severe situations. They have rules in place for basic, phase I enhanced, and phase II enhanced 9-1-1. There were rules in place for VoIP so that those customers can still access emergency services but does come with risks as explained. There were also rules in place so that those with disabilities can access emergency services as well. In time of national crisis the FCC in combination with FEMA (Federal Emergency Management Agency) and NWS (National Oceanic and Atmospheric Administrator's National weather service) activate the Emergency Alert System together to inform the public through a statement from the President of the United States. Since 2008 the FCC has adopted the ability to send emergency messages to your cell phone in time of great disaster. This was known as the Commercial Mobile Alert System (CMAS) which works with network providers to keep the public informed through their cell phones. On the state level there were certain provisions and regulations in place that further the rules of the FCC. Figure 16 represented the calls lost due to outages the graph was in decline. The point were presentd as quarters and as as each quarter ha approached the reliablity has gotten better for wireline outages. The red bar represent the FCC intervention.

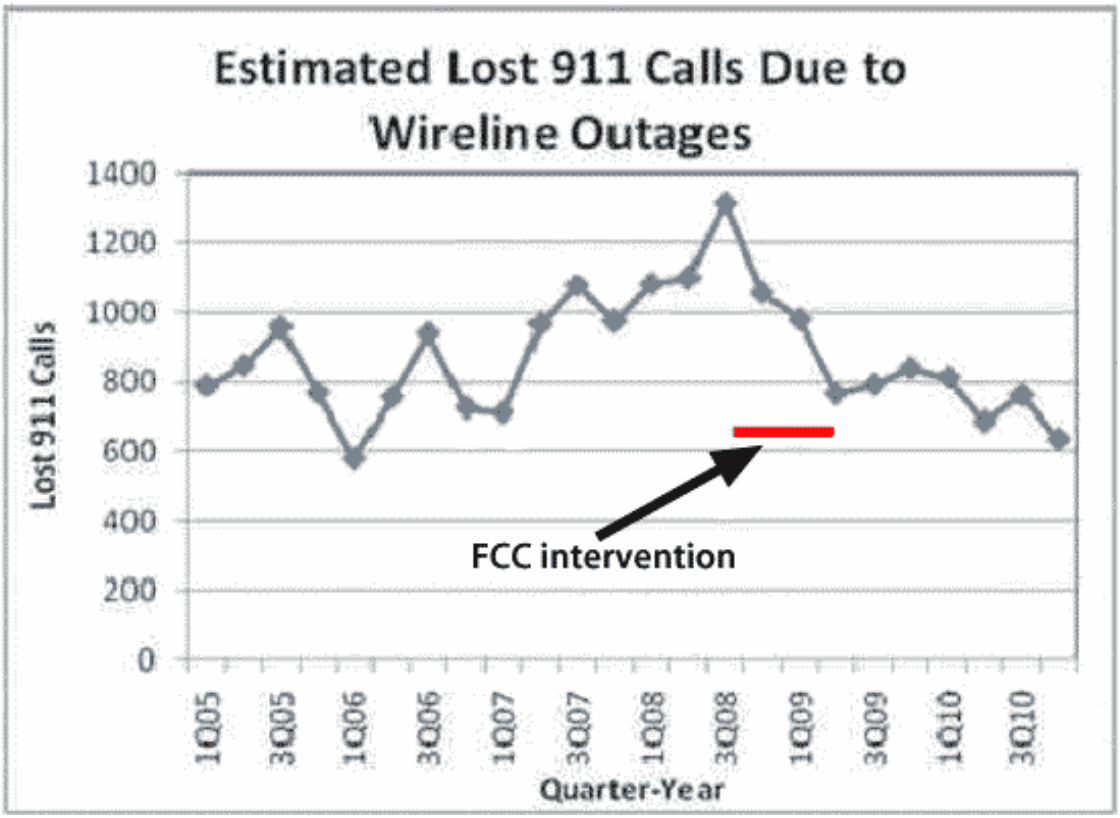

Figure 16 Lost 9-1-1 Calls due to Wireline Outages (FCC increases scrutiny on VoIP 911 outages)

In Massachusetts they passed legislation that now have the call takers at the PSAP's able to "save lives" over the phones. They have a set of emergencies that they take in an effort to free up the dispatch calls and more importantly dispatch delay. The regulations for handling 9-1-1 calls can be found less than 560 CMR 5.00 under the Massachusetts government site mass.gov//. NENA (National Emergency Association) was also a resource for finding information that was related to 9-1-1 codes and regulations. Each standard that was put in place by any notable organization was meant to reveal information on possible delays. NENA also has educational resources on the design and development of a future IP-enabled system redundancy.

2.5.2 Pre-hospital Emergency models

In this section, we explore two existing pre-hospital emergency models: Anglo-American System and Franco-German System. Most of emergency systems around the world were developed around those two systems.

Anglo-American System (AAS) model

The Anglo-American model follows "bring patients to hospital" principle. The central concern of AAS was to get patients as fast as possible with minimum pre-hospital handling. In most cases, paramedics have main responsibility of bringing victim to most suitable hospital to receive treatment from more trained doctors and staffs. History of this model dated back in the 1960's when there was a transition in EMS between physician-based units to paramedic-based units in America. Moreover, the belief of doctors and physicians were more expensive and harder to train than paramedics was one of reasons this model was used. However, in the case when pre-hospital action was required, paramedics in AAS model can perform a wide range of treatment to stabilize patient's condition before transporting. Therefore, although being less educated than doctors and physicians, paramedics receive a good amount of training and practice before they can be qualified to be dispatched. Most of the time, patients were transported to Emergency Department rather than hospital wards for treatment by doctors. As a result, Emergency Department of countries where practice AAS model tends to be more developed in technology and staffs. Notably, the countries that develop AAS model were including United States, Canada and Australia, etc (Bergh).

Franco-German System (FGS) model

In contrast to the Anglo-American model, the Franco-German model focuses more on on-site treatment rather than hospital treatment. The main principle of FGS model was "bring

hospital to patients". Thus, rather than having paramedics as dispatching units, FGS send Emergency Physicians (EP) directly to emergency site. This system was named after a concept of giving life threatening care in pre-hospital setting which was developed in 1960's by both France and Germany. Usually, EPs were responsible for making clinical decisions right on the site of emergency where they were sent to. The EPs also get assistance from an Advanced Life Support group that has developed technology for on-site treatment. In the case of less severe injuries that EPs' responsibility was not required; a Basic Life Support team with Emergency Medical Technicians or paramedics was assigned to the site instead. In other cases, EPs were transported by ambulance or helicopter to the scene, treatment begins without delay in the same place or during transport to hospital. Most of the time, patients were not needed to be transported to hospital and if they were, rather than being sent to Emergency Department like Anglo-American model, they were accepted directly into hospital wards by EPs after being treated on-site. For that reason, technology was more focused on Emergency transportation while Emergency Department was usually not present or under-developed. This model was utilized mostly in European countries like Germany, France, Greece, etc (Bergh).

Comparison between two models

The main difference between two systems was location where major treatment was delivered with AAS being in hospital while FGS being in the same place of emergency. This leads to the difference in skills of dispatching units in two systems. In AAS model, paramedics that were sent to emergency site got trained in a wide scope of practice in order to do basic treatment to stabilize victim before getting to hospital. In another hand, FGS model's Emergency Physicians require a deeper medicinal knowledge in order to deliver medical treatment right on the spot. Also, because AAS model emphasizes more on hospital side, technology was developed

focusing on Emergency Department rather than Emergency Transportation. Inversely, in FGS model, Emergency Transportation was the main concentration since that was EPs' working environment. Also, in FGS model, patients after receiving treatment get transfer to hospital wards directly bypassing Emergency Department, thus, Emergency Room was minimally developed. Figure 17 was a map that represented the distribution of two systems around the world.

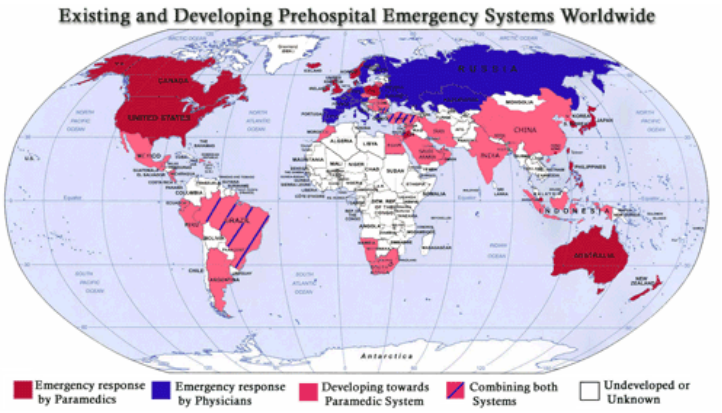

Figure 17 Distribution between countries that practice two systems in the world (Bergh)

From those main differences, we can identify the advantages and disadvantages of each system. The AAS system has advantage over FGS that it was cheaper and easier to train and employ paramedics than doctors and physicians. In another hand, Emergency Physicians in FGS model can give more professional judgment in emergency scene, especially situation when time was crucial like heart-attack or stroke. With most of cases were transferring to hospital, there could be a shortage of room in AAS system when there was an outbreak of injuries like natural disaster or big-scaled accident. For the same problem, FGS model could lack in dispatching units and emergency vehicles. Also, in cases when there was a need of extensive emergency care, lacking in emergency rooms could be a problem to FGS model.

Table 1 Advantages and disadvantages of FGS and AAS

Model	Anglo-America	Franco-German
Advantage	• Cheaper and easier to train paramedics • Emergency vehicles were more flexible and available • Emergency technology was more developed	• Can give better and more professional treatment at scene • Response time was reduced • More room in hospital when needed • Transportation technology was more developed
Disadvantage	• Can only do basic treatment at the scene • Need more time because transportation back to hospital • Can have room shortage in hospital	• Physicians were harder and more expensive to train • Emergency vehicles were not as flexible and available • Emergency Department was under-developed

2.5.3 EMT system in other States

The ultimate objective of this project was finding solutions that can be incorporated into the 9-1-1 EMS system to reduce response time. In order to archive that goal, we needed to know deeply on how current 9-1-1 system was working. To do that, besides looking into Boston EMS system, we also need to take a look at EMS system in other States.

California:

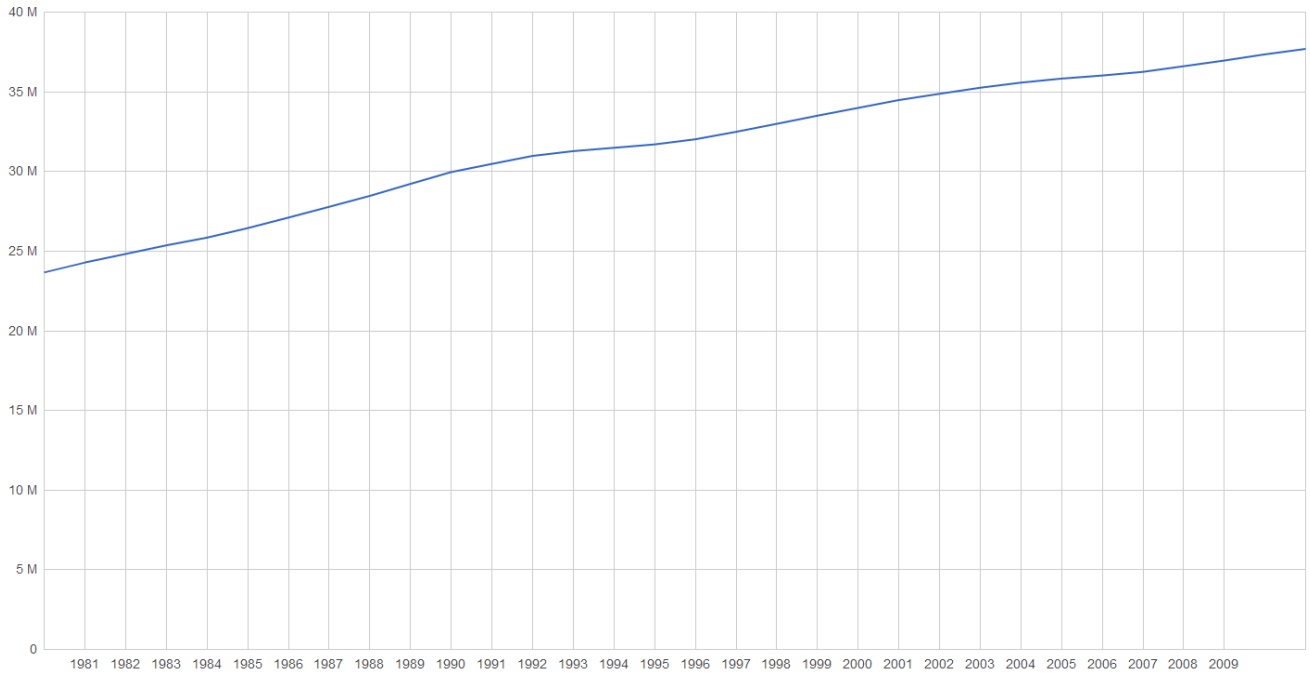

Figure 18 Population of California for the last 20 years

Being the biggest State in United States with population of more than 37 million, which was more than 10% of U.S. population (statistics from 2011), California was an ideal State for investigate if one want to know more about United States. With a population that was already massive but still increasing, it was not so surprising EMS system in California need to upgrade nonstop to cope with growth. However, reality of California EMS system was not that bright. Due to government downsizing, healthcare funding as well as equipment, infrastructure replacement funding had been severely cut off. This combined with the stress from increasing growth of the State lead to a lacking in service quality from California EMS. In "California EMS Communication Plan Final Plan", Emergency Medical Services Authority (EMSA) of California stated that "Many local EMS programs were using communications system and equipment that were twenty to twenty-five years old". The document also noted that "The average life expectancy of a communications system was ten years". This clearly shows the problematic

issues exist within even EMS system of the biggest state of United States (California EMS Communication Plan).

Besides lacking in funding, California EMS system also has several problems concerning communication and response time. These problems can be caused by inconsistency between communication standard, communication coverage as well as outdated technology. Also, we have to always remember that the number of people in California was increasing day by day with stunning speed; catching growth rate with current EMS system can be a serious problem. Furthermore, because of enormous size of the State, it was much harder to change the current system without heavy measurement from very high rankers. Because of this, in 2000, EMSA issued a communication plan for whole EMS system in whole California. The plan stated existing problem of the State's EMS system and delivered some solutions and changes that could help improving it. Most of the changes were targeting issues that corresponding to communication problem (California EMS Communication Plan).

The first change California's EMS plan specified about was desired 9-1-1 call system structure. When someone needs to call in an emergency situation, all the calls that were dialed 9-1-1 be received by the California Highway Patrol (CHP). Consequently, the CHP telecommunicator extract important information both automatically and manually from the caller like telephone number, nature and location of the case. It then be classified as emergency request and got directed to EMS personnel. This person take the information and may provide Emergency Medical Dispatch (EMD) services. Furthermore, a trained telecommunicator may provide emergency medical advice before field medical team arrives. The telecommunicator also gives response from other emergency agencies, such as law enforcement, rescue and fire departments. This telecommunicator should have access to all communications to all EMS

related medical facilities in the area and all data of EMS treatment capabilities. Communication systems must ensure to issue dispatch to emergency and remain in contact with the dispatch entire dispatch time. This trained telecommunicator should have EMD training so they can give out pre-arrival instruction to the callers (California EMS Communication Plan).

There were several technology could help with this process. First and foremost, there was Automatic Number Indicator (ANI) and Automatic Location Indicator (ALI) that help the telecommunicator identify emergency information even if the call was cut off midway. Also, EMS communication system includes Computer Aided Dispatch (CAD) program that can help with identify and classify the calls as well as Automatic Vehicle Location (AVL) system that can assist in guiding dispatcher to the emergency location. Nevertheless, existing Public Safety Answering Point (PSAP) also alleviate difficulties in emergency communication (California EMS Communication Plan).

Not only the plan targeting local EMS coordination but also EMSA want to have a consistent system in statewide scale. In order to do this, the State needs a system of integrated communication channels and all smaller areas should unify in a communication standard. The communication was including from caller to hospital, from hospital to dispatch unit and from hospital to other hospital and could be phone, radio or any other form of communication. This not only helps in reducing response time in normal emergency situation but also supports large scaled emergency situation like hurricane, earthquake or flood (California EMS Communication Plan).

Connecticut

In 2008, Federal Emergency Management Agency (FEMA) of the State of Connecticut had passed a communication plan targeting high-scaled emergency situation, including natural disasters and terrorism. The plan's main purpose was to cope up with the outgrowth of population compared to emergency system. Also, the plan can be treated as a guideline for consistent and quick reaction for the case of emergency with possibility of regular communication methods was disabled. Nevertheless, this was the chance for State of Connecticut to reassess their communication system, identifying existing drawback that can be improved and replacing outdated, damaged equipment (U.S. Department of Homeland Security Federal Emergency Management Agency Emergency Communications Plan).

The plan consists of 10 chapters describing 6 communication plans in different emergency situations, including Command and Control Communication, Sheltering Communication, Medical Communication, etc. Our focus would be in Medical Communication section, where FEMA describe minimum requirement that must be met for Medical response in state-scaled emergency situation. Notably, there were 13 state wise Coordinated Medical Emergency Dispatch (CMED) centers that was distributed around the state. The CMED centers have responsibility of receiving and classifying calls, locating callers' locations and dispatching corresponding unit to the scene. Communication methods were including High-band VHF system between 13 CMED centers (MEDNET), CMED-EMS communication system, cellular phones, etc. This varied methodology communication system ensures that communication can still be made no matter the severity of situation. There was also Connecticut Department of Public Health (CT-DPH) which provides oversight of situation as well as information of hospitals, health departments and EMS agencies.

In the situation of medical emergency, the FEMA plan states that CMED facilities have a priority to get restoration (TSP) for telephone and data lines, ensuring quickest repair ability when the lines were disabled. The plan also ensures that there must be a backup of fifteen 100 Watts 450 MHz radio bases and 6dB gain antennas for emergency communication. Nevertheless, an amount of 35 MSV PTT satellite phone was served as backup plan for when other methods were unusable (U.S. Department of Homeland Security Federal Emergency Management Agency Emergency Communications Plan).

2.6 IC3 Index

The ultimate goal of our project was to develop an improved system of 9-1-1 Communication, more specifically, by reduce response time delay of the system. However, to reach that goal, we have to go step-by-step by breaking down the process into some smaller one. Similarly, in order to know how far we have reached, how near to the final goal we were at, we need to divide the goal into smaller goals. Those smaller goals act as indicators for our efforts that affect the 9-1-1 EMS Communication systems. The indicators include Readmission, Efficiency, Evaluation, Diagnosis, Intervention and Treatment. Together, they form a system of indicators named the Incident Centric Composite Care(IC3) index. Our smaller goals was improving quality of all the processes in IC3 index via reducing response delay time.

Readmission is the process which patient get reached by Dispatcher and transferred to a better treatment environment like hospitals or clinic. By reducing time response delay when the call was made until it reach Coordinated Medical Emergency Dispatch(CMED) as well as delay when CMED contacts First Responder and when First Responder get to the scene, Readmission time was reduced indirectly, thus, making the process faster and easier.

Evaluation takes place when the First Responder get to emergency scene and start basic assess on the situation. Evaluation process greatly depends on severity of emergency situation, which in many cases, get worsen in time. Therefore, a faster response time was equivalent to better Evaluation process.

Efficiency is how well the overall procedure was processed as well as resource was utilized. With smaller response time, the patient can be treated faster and the dispatched unit had more time for other cases, thus, maximizing resources usage.

Diagnosis is the process of when a patient successfully arrives to the hospital and doctors assess the case. Patient can receive diagnosis more quickly and efficiently with smaller delay response time.

Intervention takes place when patient has life-threatening situation that require action from trained personnel in medical field as soon as possible. Usually, this include Basic Life Supporting from First Responders that help stabilizing patients' condition so that they can be transferred to the hospital for more intense treatment like surgery. As very time critical those situations can be, time response delay reducing plays a big role in improving Intervention process.

Treatment comes after doctors have done with their Diagnosis process and lasts until the patient was healthy again. Consequently, a better and faster Diagnosis can help Treatment process a lot easier and more efficiently. Also, for time critical situation like stroke or heart attack, a slow medical action can cost a very long time and effort of Treatment. As a result, smaller time response delay accelerates greatly Treatment process.

CHAPTER 3: ATTEMPTS IN REDUCING TIME RESPONSE DELAY IN 9-1-1 COMMUNICATION

3. Introduction

In this section, we talked about possible suggestion and idea that can be used to enhance the time response delay in 9-1-1 Communication. These included analysis on reasons of response delay in 9-1-1 Communication and possible solutions for the problem. The solutions we introduced in this report were the Control Theory, its derived Variable Time Delay Equations and a program that was designed to assist emergency call receiving personnel.

3.1 Analysis Process

There were four most important questions that were needed to be answered in any problem solving process: What the problem was, which the resources were available, why the problem existed and how the problem can be solved. Engineering was a type of problem solving process, so those questions were also applicable in designing practice. Concerning our project, the first and second question had been answered in the first two chapters of this report. Therefore, the next question that needed to be answered was the third one: why the problem existed. This question was usually called analysis process. In a designing process, analysis was a very crucial component since it combines existing information and pioneers possible ideas.

As we had identified in prior chapters, the ultimate goal of this project was to reduce response time delay in Emergency communication system. Response time delay in communication depends on many different factors. However, those factors could be classified into three main categories of difficulty: Technology, People and Environment. Figure 19 was a digram summarized those three categories.

Technology difficulty comprised of delay caused by communication equipments, network or systems, etc. For instance, delay due to internet latency or overloaded network can be listed in this category. This difficulty can usually be resolved by upgrading and updating into newer technology.

People difficulty consisted of delay caused by mental and physical behavior of human. This included difference in languages, mistakes from inexperience or exhaustion and panic. Those problems can be overcome with education and training.

Environment difficulty encompassed delay caused by surrounding effects. Weather and traffic can be categorized as environment difficulty. Information concerning hospital availability can also be classified within this difficulty. Out of three difficulties, this was the hardest to overcome because most of the causes depend largely on chances and varies with time. One of the ways to solve this problem was with data management such as information collecting (traffic situation and hospital availability) or prediction (weather forecasting).

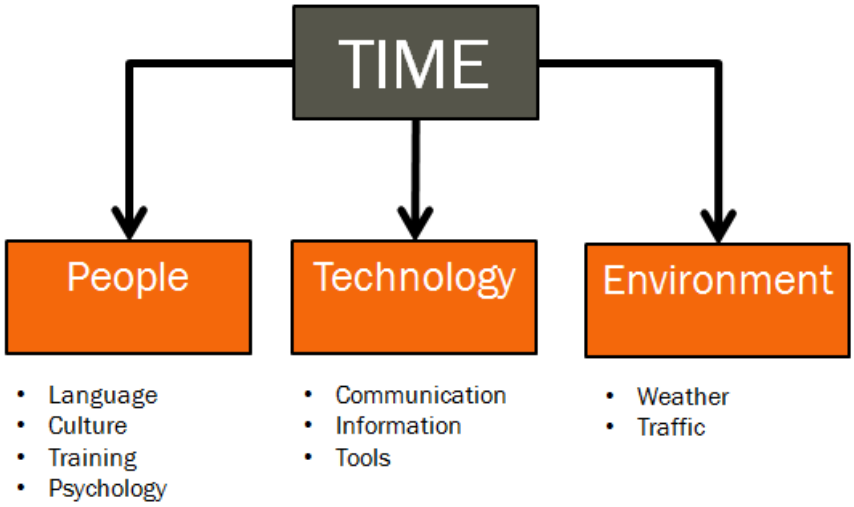

Figure 19 Three time delay difficulties diagram

3.2 Problem solving process:

With three difficulties identified, the question concerning why the problem exists had been answer. That leaves us with the final and the most important question: how the problem can be solved. Logically, the solutions of response delay should be able to tackle the difficulties. In three difficulties, environment difficulty was the hardest to be fixed as the causes were largely varied on different time (weather) and location (traffic) and it also needed larger scale solution than the other two. People and technology difficulties, in the other hand, were easier and more practical to solve as those were more predictable and require simpler solutions. In this report, two solutions would be introduced concerning reducing response time delay. The first solution was the control theory model and variable time delay equations that were derived from it. This solution targeted the technology difficulty as it can help determine network delay of certain situation so that more appropriate action could be taken. In another hand, the second solution which was a program called eGuideCard dealed more with people difficulty. The purpose of eGuideCard was to help emergency call receiver personnel of 9-1-1 center by provide them suitable questions to ask emergency caller so they can acquire most important information within smallest time possible. Those two solutions would lessen the people and technology difficulties, therefore, reducing response time delay. Figure 20 was a diagram of the solutions and their corresponding targets.

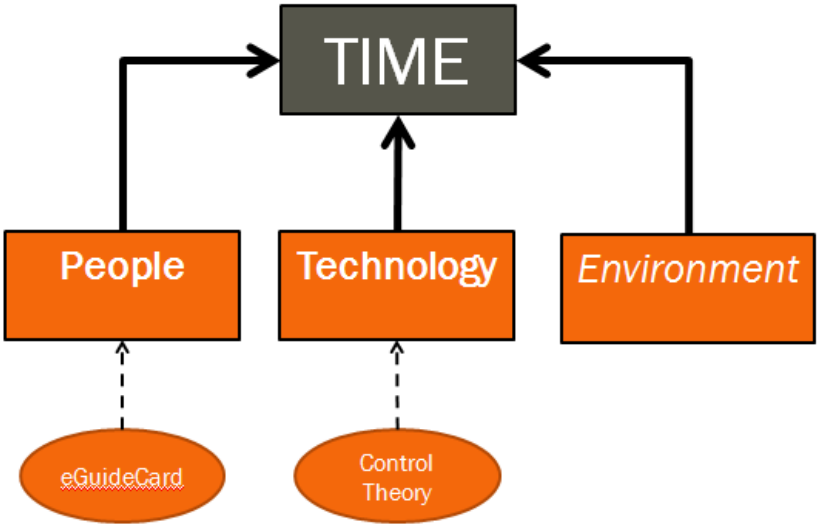

Figure 20 Solutions to reducing time response delay

3.3 Control Theory

Control theory was the first solution that had been created in this project for the purpose of reducing resonponse time delay of 9-1-1 communcation system. The control theory broke down the paths between caller to call taker and first responders to hospital. In those paths, each physical factor was presented with a more theoretical model. By doing so, the real life 9-1-1 communcation system was converted into a mathematical model that could be used to derive and apply equations. The control theory opened a lot of opportunity in further work concerning calculating and simulating time response delay.

3.3.1 Delay types

First it was important to understand the basics of a control system: A control system was a collection of components that was put together to obtain an output. In the case of the 9-1-1 call system, the output that was going to be gathered was the total time from initial call until the appropriate first responder arrives. The delays was broken down into three major parts: The

network delays, the system delays, and natural delays - the delays that were out of human control.

Network delay

The first delay in the control system was the network delay. The network delay was the delay time between the caller dialing 9-1-1 and the dispatcher sending out first responders, as shown in Figure 21:

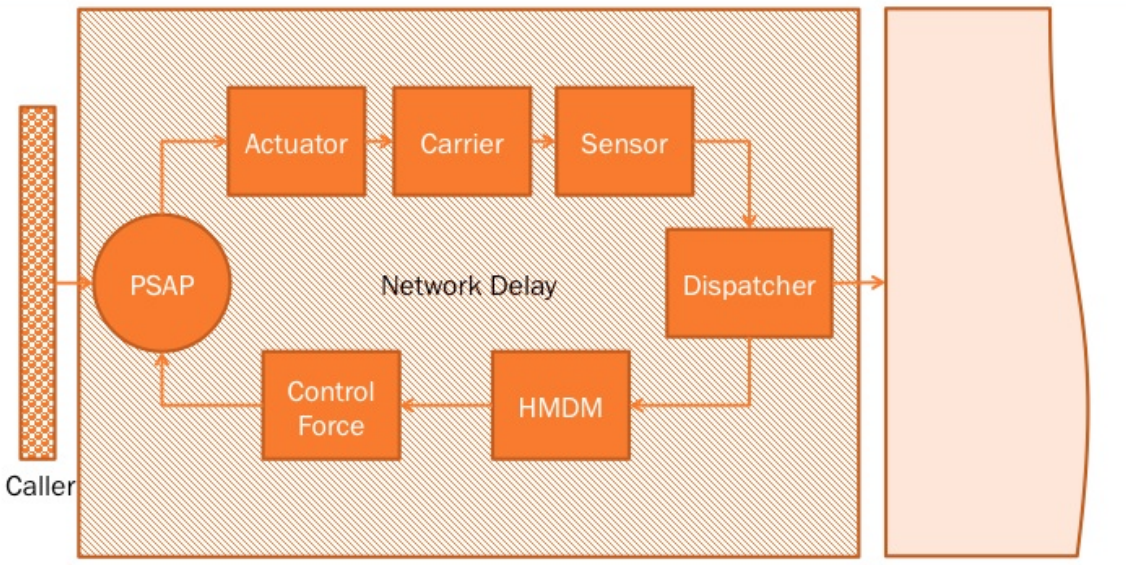

Figure 21 Network Delay of Control Theory diagram

The network delay began with a caller dialing 911 by one of three methods: voice over land phone (VOLP), voice over cell phone (VOCP), and voice over IP (VOIP). Each of these methods had their own respective delays due to variables such as cellular carrier in the case of VOCP, speed of Internet connection in the case of VOIP, and general condition of cables and telephone network in the case of VOLP. All calls came in to a local Public Safety Answering Point (PSAP) depending on the area the call was made from and method of the call. Once the

call was received by the PSAP it was transmitted to a dispatcher. Based on the nature of the emergency, the dispatcher sent the appropriate first responder.

System Delay

The system delay followed the same basic outline as the network delay. The system delay started with the first responders receiving information from the dispatcher about the location and nature of the emergency. Once the first responders arrive on scene they must make an assessment of the situation and decide on the best course of action. The following example was for an EMS call with transportation to a hospital: The EMS personnel stabilized the patient and loaded them into the ambulance for transport to a hospital. The system delay works much in the same fashion as the network delay. The hospital was contacted with the nature of the patient's condition. Generally the patient was brought to the nearest hospital unless there were extreme circumstances that would prevent the patient from receiving the care necessary. This would add to the total delay time as the control system would continue to loop through the system delay process, which can be seen in Figure 22:

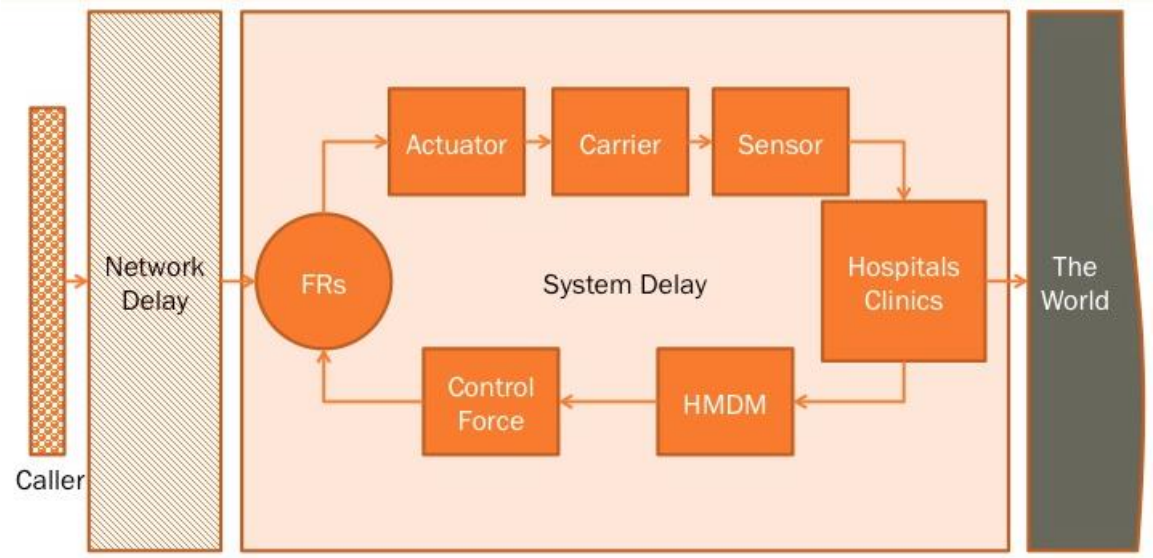

Figure 22 System Delay of Control Theory diagram

Total Delay

The total delay of the 911-call system was the sum of multiple small delays: The network delays, the time between the call information being passed between the network and system, the system delays, and finally natural delays. Natural delays were delays which cannot be accounted for with certainty and include things like traffic, bad weather, natural disasters, and other factors out of human control. A brief overview of the entire delay system can be seen in Figure 23:

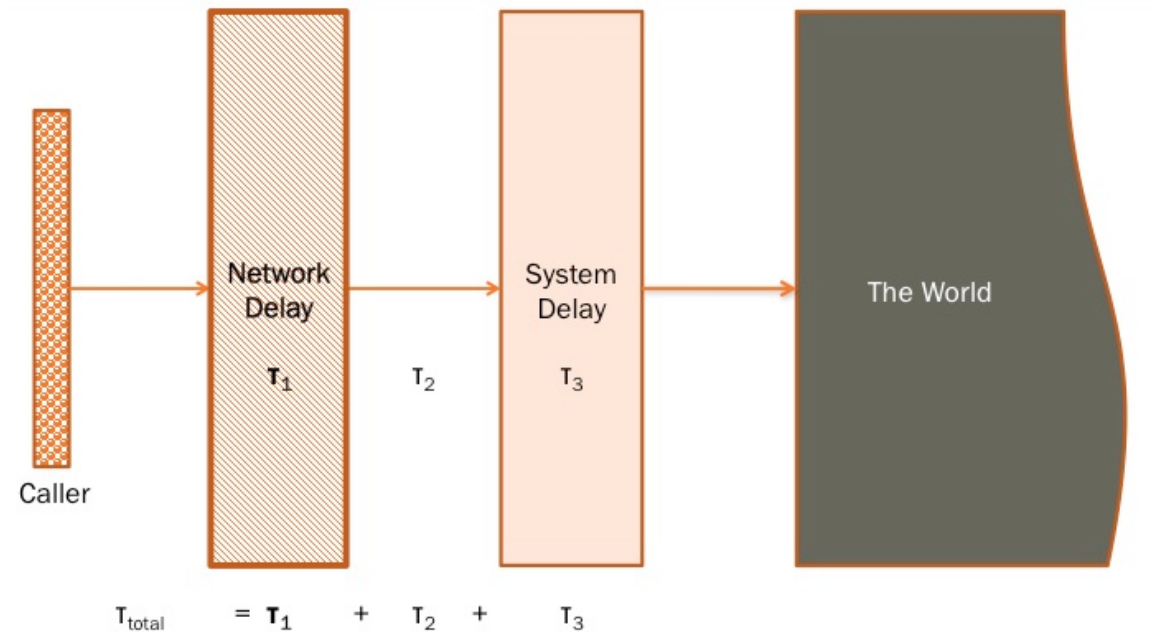

Figure 23 Total Delay of Control Theory diagram

In the end, the simplest goal was to analyze the time delays in these areas and determine ways in which these delays can be further reduced. When these delays were reduced the entire 911-call efficiency improves. The time from initial call to first responders arriving on scene, and in certain cases, patients' arriving at a hospital, was shortened and the IC3 Index was improved.

3.3.2 Variable time delay equation

The control theory has created a block flowchart model that illustrates the delays found in the 911 call process. The model was accompanied by a series of equations meant to show the delays between specific points on the model. There were human delays, system disturbances and communication delays. The control theory acts as a representation while the equation was the mathematical model for showing the delays at various points in the 911 call taking process. The equations that have been developed were meant to be used as a corrective action to the each delay scenario. The equations indicate where the delays were occurring. The control theory model shows the flow of the 911 call process with the call coming in through by way of three

major types of communication. The VoLP (voice over land phone), the VoCP (voice over cell phone), and VoIP (voice over internet protocol) all go into model as the driving force for the whole process. Each call, no matter what the type was received by the N.E.S.T. This NEST was an acronym for (Network Equipment Services Technology). The network would be the form of the call such as an IP network, cellphone satellite, or a landline network. The PSAPs were usually equipped to handle all. The services would depend on the source of the carrier from and to the user placing the call and receiving the call. The absence of services to initiate and receive the call whether it was a cell phone network, landline, or an internet provider would result in the inability to make and receive the call. The equipment was just as important. The equipment involved was also very important. The equipment used in the call taking process vary from PSAP to another. Each call taker has some form of a CAD (computer aided dispatch) system that pulls up information on the caller based on location and carrier. Landlines display the address as well as the subscriber and carrier. The cell phone show the callers information from the cell phone network. Some systems show the location when the call was placed but does not act as a GPS system. The sensors job, found in the equipment, was tell the user of the equipment what was going on so that we can control it because without a sensor the notion of what needs to be controlled be unknown. There were sensors in the form of weather Doppler's that can help predict the oncoming weather. This sensor relays this information so that the receiver can take the appropriate action such as wearing a coat or putting on sunscreen. This equipment has the sensors necessary to tell the user what needs to be put into to the controller to influence the outcome. This controller can be in the form of a person or some sort of machine that shows what going on based on the feedback from the sensor. This controller directly influence what was going on to up keep the stability of the system as well as reduce the delays. The basis was to

assess what was going on and what can be controlled? The technology was also important. The technology was constantly improving to better assist in the current process of taking emergency calls. Each PSAP has its own technology that assists in this process. Across the country there were different systems in use all with the same goal. Through the nest the call travels through a junction to the PSAP. In order to reach the PSAP there was a necessary actuator for power transmission and there was necessary equipment that processes the data from the actuator and sends it through to a sensor necessary for the PSAP to receive the call information, such as the type of call, caller location, and information. Once the PSAP has received the call and has begun to speak the caller he/she can begin the HMDP (Hopf-Markovian Decision process). This represents the parameters for each emergency and the protocol and procedures for handling each emergency. Once this process has been followed the PSAP can decide the best course of action whether that was contacting the police, fire department, contacting the EMS, or sending the caller to a closer PSAP, and even sending the caller to a non-emergency call center such as the department of public health. This action acts as the controller. The call receiver can influence the whole process based on the action. The controller also can be what was done while the call was coming to maintain the connection. While this whole process carries on the system was constantly receiving feedback which comes at the end of the loop. Now that the control theory

loop has been reiterated the delays found in the loop was presented in Figure 24.

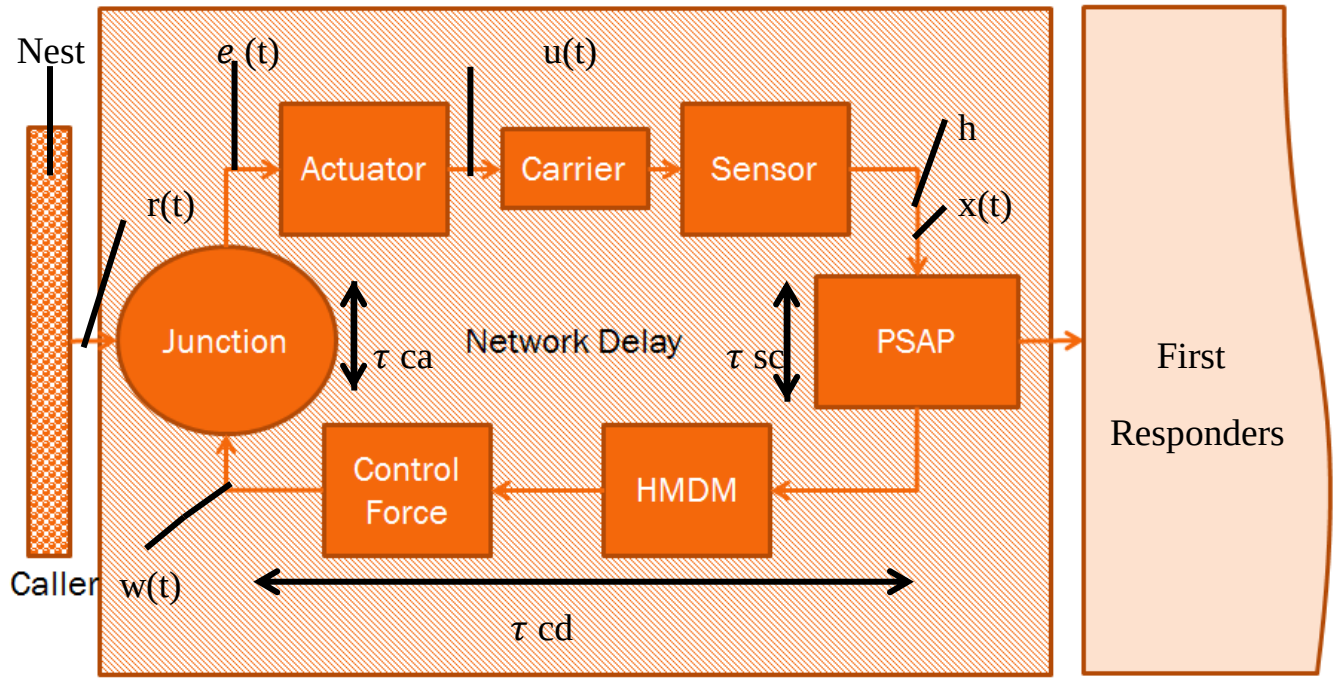

Figure 24: Delays in the control loop

The call has entered the nest and was proceeding through the loop. Now that the process of the call to the PSPAP has been plotted we can return to the model and analyze the various points at which the delays exist. In addition to the delays we can plot the location of the important events that occur within the loop other than the delays. Just before the junction was entered by the call there lays a symbol for the call known as the driving force:

$$r\ (t)$$

This represents the incoming call as a signal that enters the junction. There was an error shown after the actuator known as:

$$u\ (t)$$

There was the sampling rate delay shown as h after the sensor. The end of the loop contains the feedback variable:

$$w\ (t)$$

The variable x (t) carries all of these into the PSAP. The next things we can analyze were the major delays between each node. There was a delay between the actuator and controller which was denoted as:

$$\tau\ (ca),$$

a delay between the end of the controller and the beginning of the decision making process

$$\tau\ (cd),$$

a delay between the sensor and controller:

$$\tau\ (sc),$$

a delay after the sensor was shown as h, and a system disturbance delay:

$$\sigma\ (t),$$

which was everything that affects the stem that cannot be controlled with respect to time. Tau(sc) and Tau (ca) were communication delays. Tau (ca) was considered a human factor delay. Sigma(t) and h were known as system disturbance and sampling rate delays respectively. We put this into our first equation as:

$$\tau(t) = h + \tau(sc) + \tau(cd) + \tau(ca) + \sigma(t)$$

This equation represents the major delays between the caller and PSAP. The junction at the beginning of the loop was then broken down into an equation to illustrate the goal of reducing the delays. There was the error which was represented by:

e (t),

and the previously mentioned feedback variable w(t) and driving force r(t) that enter and exit the junction.

$$e(t) = r(t) - w(t)$$

The goal was to make the error in this equation equal to 0 by reducing the delays in the feedback to a level where it matches the driving force. The objective was to reduce the delays so that healthcare for the patients that call 911 improve. The ideal systems respond to the patients that call 911 as soon as possible. In emergency situations where an EMS needs to be sent the last thing any healthcare provider or PSAP wants was to do was extend the time it takes to properly care for the patient. When delays get in the way of health care it can lead to serious injury and in some case death. Having knowledge of where the delays were coming from can help aid the community by allowing the receiver to take the appropriate action. When the delays sum to 0 you would see as in Figure 25:

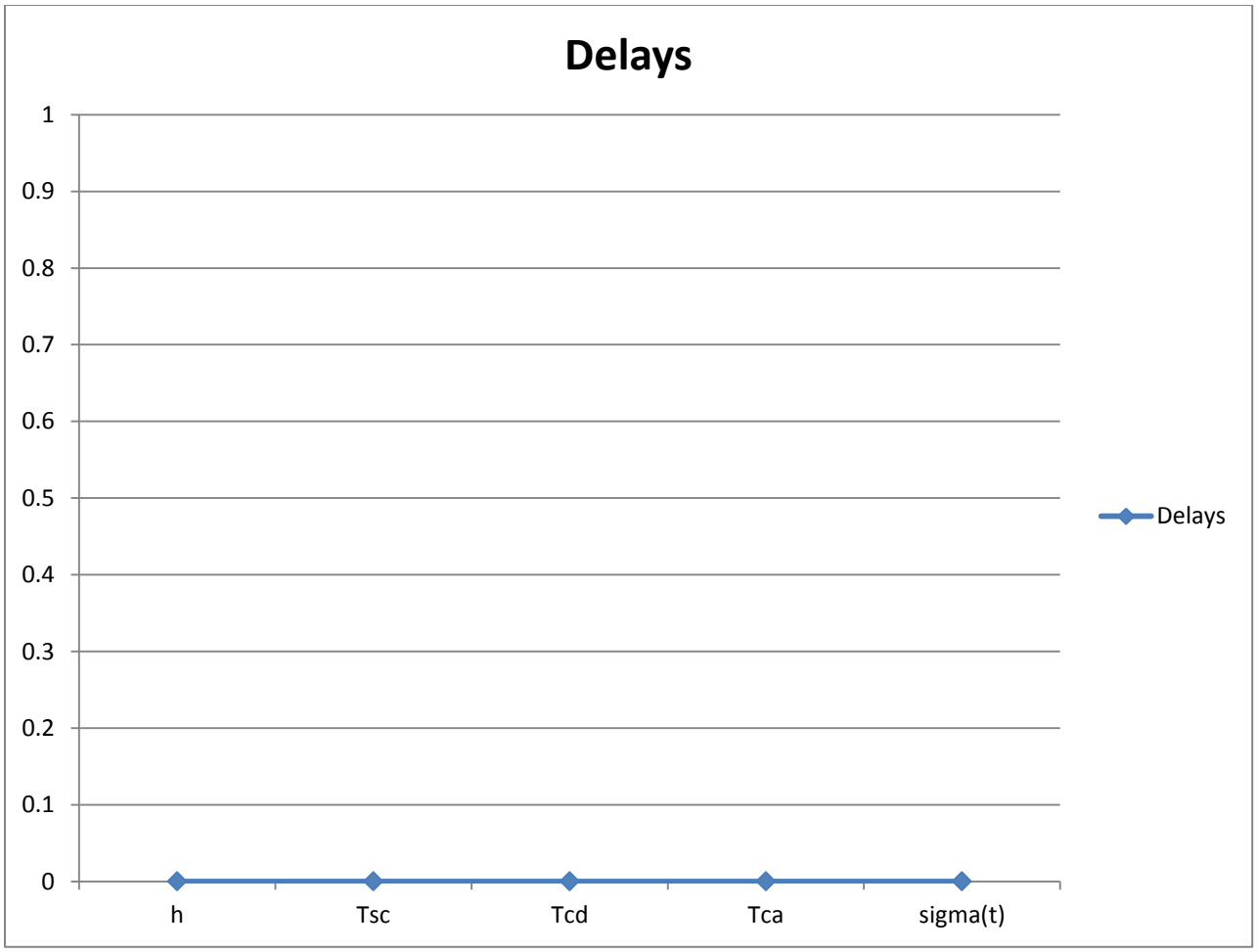

Figure 25 Ideal delay situation (no delay)

This was an ideal situation. The above line graph shows 0 for each type of delay. This not hold true due to the fact that delays always exist in the system but if those delays can be brought to light then they could use the controller to influence the outcome by taking the appropriate action. Figure 26 was meant to illustrate the delays when they were not 0.

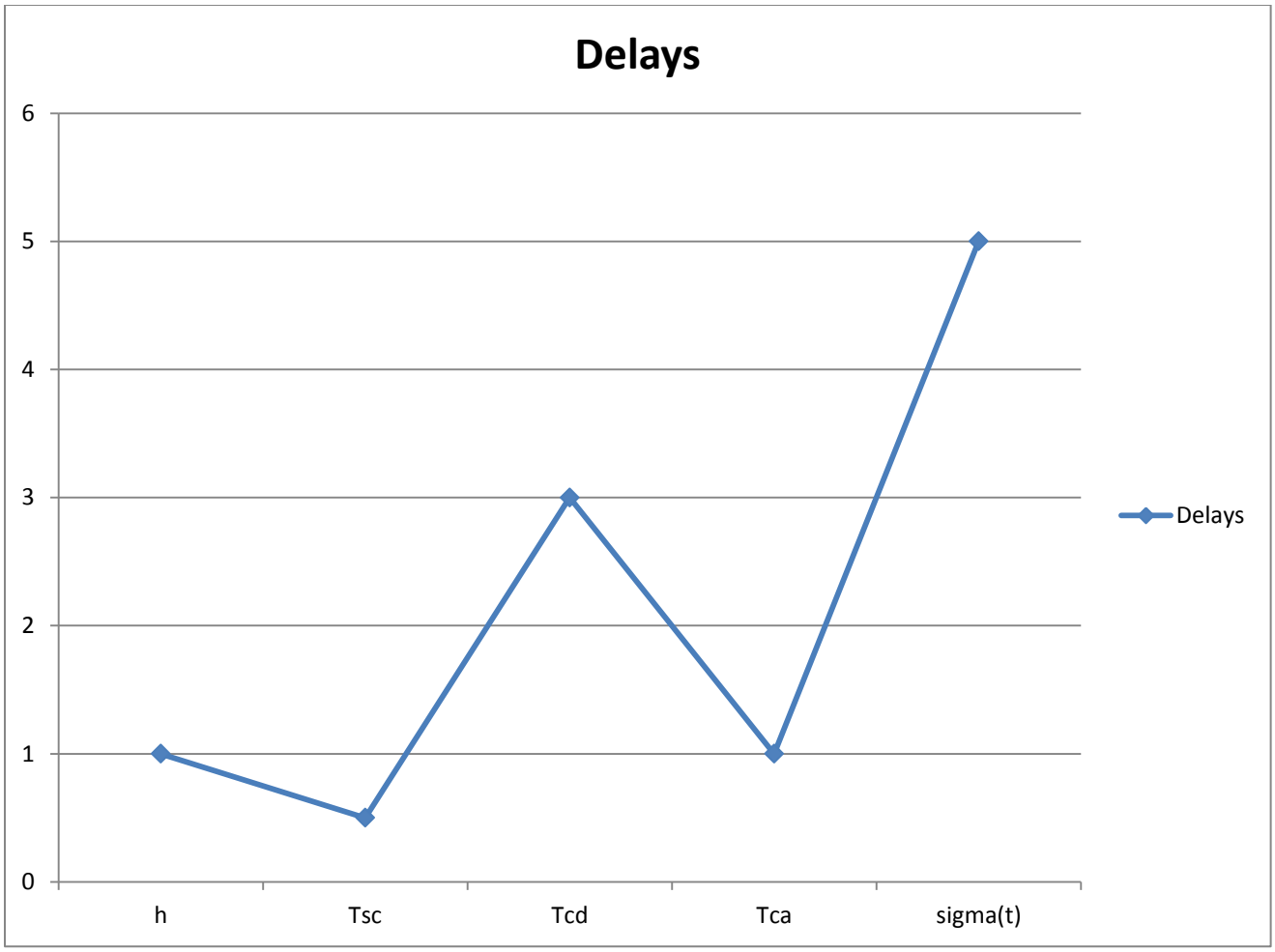

Figure 26 Non-Ideal delay

This line chart that has been fabricated above could show each delay in terms of minutes. Each delay would sum together to show the total delays on each call in minutes. The delays increase or decrease as a function of time. This graph takes the five major delays in the system and creates a visual. The idea carry over into the next phase. This control theory diagram was known as a block diagram. This diagram illustrates the closed loop that generates an output that can be compared to the input to attempt corrective action. This loop (Figure 27) was duplicated again to give us the delays between the first responders and the PSAPs'.

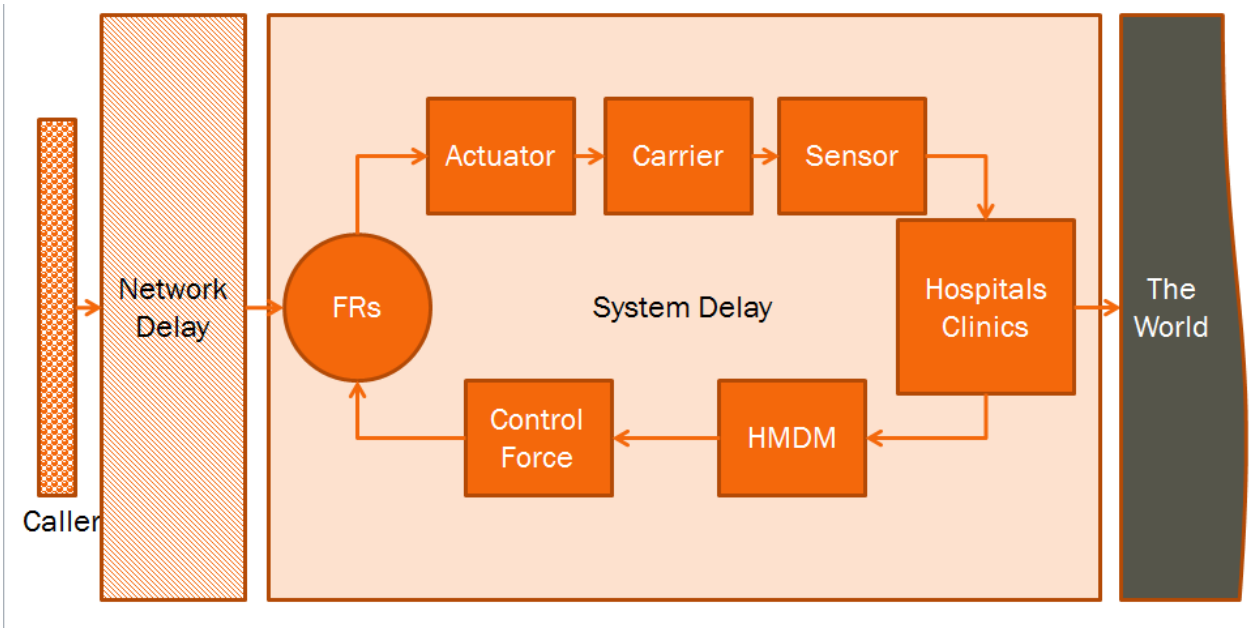

Figure 27: Second control loop

Once the loop has been traveled through enough times to generate a final decision the caller can be sent off to the first responders in which they encounter the same loop and same type of delays. Since these delays were the most important delays there was a need to display this information to the PSAPs'. This information would be useful in determining where the major delays were occurring so that as the controller the appropriate action can be taken to positively influence the delays by reducing them. As mentioned previously there were at least two major communication delays that occur within the control model. There was the delay between the sensor and controller and the actuator and controller. While the call was taking place this feedback loop was occurring at every step in the call. At this point the communication delay occurring between the sensor and controller depends on what sort of information was going into the sensor and how this sensor was being influenced by the controller. Part of what goes into the sensor has to deal with not only the influence of the controller but also the actuators and equipment involved in the call. The actuator was what keeps the call going which be impacted by

the type of call that comes in along with power transmission of the call. When the power stops for some of the PSAP's the whole system comes to stop. According to the FCC (Federal Communications Commission), every PSAP must have a plan that they enact when their main power supply fails. The FCC gives certain actions to take when installing, refilling, and using generators during an outage. The FCC also recommends keeping batteries in large supply in addition to testing out the equipment that was used when the commercial power systems were down. The caller also was affected in the absence of actuator to keep the call going. If the caller was on a cordless phone in their house there could was various scenarios where the battery needs to be charged, the call signal gets weaker the further the caller was from the base, and many other scenarios. Each type of call whether it be on a landline or cellphone, or over the internet require some sort of actuator to kick start the call. A corded landline phone that was connected to a copper wire system was very stable because of the fact that those wires were normally buried below the ground and connect to a local exchange. When the power goes out in your home the phone still works due to fact that the power need to operate the phone comes from the exchange location. The exchanges also use generators in the absence of commercial power systems. Landline phones also require very little power to operate them. A voltage between 6 and volts was enough to power a landline phone. The cordless phone has adaptors that use 120 volts and the talk time and standby time don't last very long by comparison to a corded phone. If there was no power to the base of a cordless phone then the handset was usually useless. The other advantage to using a landline phone was the simple fact that when the call comes into the PSAP they can see all of the information as supplied by the carrier. Assuming the caller has paid their bill to the carrier, the phone work and that information that the caller has given to the phone company then was transmitted to the PSAP giving information such as the name of the

subscriber and the address. This information was critical in locating the caller and reducing the delays so that the PSAP can influence the call by taking the appropriate action. All of the information regarding how the call was initiated and sustained from the caller can and increase the delays on the receiver. The power and equipment both feed into sensor and these two components influence the controller. Cell phones depend on network coverage and battery life of the phone. Figure 28 shows the location of some of the cell towers in central Massachusetts courtesy of Google maps.

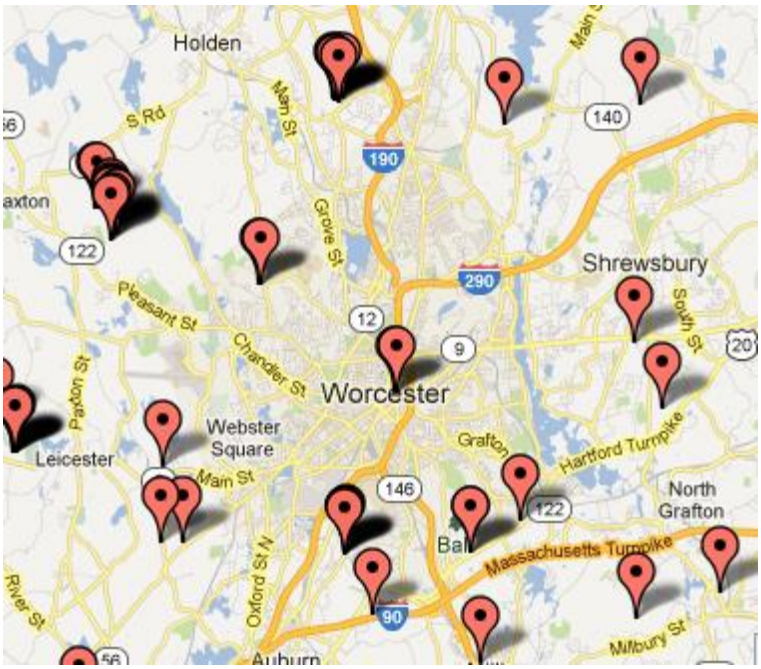

Figure 28: Map of the cell phone towers in Worcester

This map shows some of the towers. According to a visit that we made to a PSAP there were some cell towers that were not known to the public for security reasons. Cellular calls were transmitted to the cellphone towers and then off to a mobile exchange similar to the landlines. The delays into the sensor were still the actuator and equipment. The equipment used for cell phones triangulate the location of the call and makes a decision on where to send that call. A caller could be on a cellphone on I-290 in the city of Worcester, Massachusetts. The dedicated

towers on the highway send that call to Framingham, Massachusetts and from there that call was routed back to Worcester. This communication delay could was reduced by the caller if perhaps they know the phone number to the Worcester Police Department. When calling on a cell phone the information that goes to the PSAP vary. If the caller was active with their cell carrier the PSAP was provided of the information that was supplied to the cell phone company. The location depend on the equipment. In the year 2013 there was a very small percentage of PSAPs that have not implanted phase 1 and 2. According to NENA (National Emergency Number Association), there was about 1.6% of PSAPs that have not fully implemented phase 1 and 2.7% that have not implemented phase 2. Recall, from earlier that phase 1 of enhanced 9-1-1 gives the PSAP the callers' number, sometimes the subscriber ID, and the location of the cell tower that the call was going through. All functioning cell phones must be able to reach 9-1-1 regardless of whether the user was an active subscriber or not. The difference was the information that come through. This can increase the communication delays for the caller and receiver as there only be location of the active cell tower taking the call. The communication delays for VoIP (Voice over Internet Protocol) come from power and equipment as well that feed into the sensor. When a caller places a call over the internet there was a necessary broadband or DSL (Digital Subscriber Line) connection required. A caller could have a laptop when the power goes out but if there was no internet connection the call cannot be placed. VoIP was the least reliable by comparison to the other connections. Though the FCC requires all VoIP carriers to supply their subscribers with access to 9-1-1 which reveal a default location it was not clear if each carrier was in compliance so it was up to the subscriber to make certain they were. The many risks associated with calling 9-1-1 from VoIP such as internet connection, PSAP equipment capability, location discrepancy, and many other dependent factors would seem to outweigh the benefits but was seen as a cost

effective alternative to a landline or a cell phone. When the sensor takes in the information to send to the PSAP the previous stated factors could drastically increase the communication delays.

The other communication delay in the presented control model occurs between the actuator and the controller. This delays was positioned between the end and beginning of the continuous control loop. This occur more specifically between the influence put on the call and the power (actuator) to keep the call going as it travels through the entire loop continually. This was the delay that occur after each step in the loop. Some of the factors that would affect this delay would be the same as in the previous delay because they were both communication delays such as the connection of the type of call could affect the influence of the controller and thereby influence the signal that was received by the actuator. The next type of delay to discuss was the delay that occurs between the controller and the decision processes. This delay as mentioned previously was known as the human factor delay. This delay occur as a result of the decision that was made in response to the callers' situation and the action taken as a result of the decision. Each PSAP has a set rules, regulations, procedures, policies, and protocols. This may vary from state to state and city to city. Dependent on the state of the callers' emergency the procedure vary. The caller was speaking with the PSAP and the receiver initiates the decision making process. If the patient's emergency was a paper cut vs. a heart attack the decision made vary. Once the receiver was sure about their appropriate course of action the call was sent off to another receiver or the call may end after the appropriate advice has been given. The other contribution to the human factor delay come from the caller. In times of emergency people were not always coherent, which was understandable. This add to the delays under human factor. The other delays occur in the sampling rate and the system disturbance. The sampling rate delay

occur just before the PSAP as shown in the control model. The delay occur as a function of time. The sampling rate would also depend on the frequency of the sampling rate. The last of the delays was the system disturbance. This delay was due to all the external factors in each delay. There could be bad weather, traffic jam, a shooting, or power lines down. This delay was not easily controlled due to its nature, but was accounted for because it could have a major effect on the calls that come into the PSAP. The idea was to connect the delays together in a software that would give the PSAP a visual of the occurring delays so that they may be reduced. The data that feeds into the equation could tell the PSAP whether the delay was due to the communications, the caller and/or the receiver, the sampling rate needs to be increased or decreased, and weather there was some external force acting on the system causing the disturbance. The information returned from the equation gives the PSAP a visual on the delays and may assist in taking corrective action because of an increase in and someone reports it this increase the system disturbance. When the system disturbance increases and each PSAP operator was aware of the situation they can reduce the delays in the call tree by weeding out those calls because the information was already known. Future improvements to the system may even be helpful in informing the first responders which route to take pending on factors such as location and time of day. If the delay communication delays were high maybe there was a problem with the equipment creating bad connections or maybe the call volume was very high and the system can't take it. If the human factor delays were high maybe there has been a large disaster and the PSAPs were having a hard time interacting with the patients or perhaps the PSAP was understaffed. Each PSAP have protocols and procedures that define the delays for each type of call. What may be considered a delay in a case involving a heart attack may not be considered a delay the case of an animal bite depending on the severity. While this process was occurring this

signal travels through the control loop that has been constructed the system was obtaining feedback as well as imputing information into the system creating a displacement:

$$x(t)$$

This displacement was as a result of the delays. The displacement was located just before the PSAP on the control model. This displacement (x) was as a function of time. The errors and the feedback sum the driving force of the loop. Each specified delay in the system contribute to the displacement (x). The overall displacements as well as each of the delays were time dependent. What was considered a delay for a specific type of emergency vary. A heart attack not carry the same level of delay as a sprained ankle. A heart attack would require dispatch of the first responders immediately. The PSAP would take the call and prioritize the call based on the emergency. Each error (u(t)) that appears in the control loop (after the actuator and PSAP) was combined generate the displacement. The points where feedback was located in the control model were compared to the error to generate the x(t) as well. This displacement was used in a relation that involves the stiffness of the system. In physics the formula that relates volume to density and mass was:

$$D = \frac{M}{V}$$

In terms of 911 the same relation can be made. The population density multiplied by the volume of calls taken output the mass that the system was supporting. In Massachusetts the call volume according to Mass.gov the call volume of 911 calls in 2011 was just below 1.98 million calls. The population density in Massachusetts was about 6.6 million according to the United Sates Census. The mass of the 911 calls in 2011 was around 13 million calls per inhabitant per

square mile. In addition to density there was also a comparison made between the systems' rigidity. The system that supports 911 calls would ideally be stiff and rigid as opposed to flimsy and disconnected. In physics a spring has as stiffness k that was found by dividing the forces acting on the spring by the displacement of the spring.

$$k = \frac{F}{x}$$

The same was said for the 911 call system. The displacement that had been generated was inverted and multiplied by forces acting on the mass outputting the stiffness of the system. The presented equation of the control model gives the displacements to the mass that has been assessed using the call volume and density. The mass was the system with all the aforementioned forces acting on it. The graphs related to these systems have different representation depending on their requirements.

3.4 eGuideCard

eGuideCard was a program that was designed to help emergency call receiver by providing its user a set of questions that needed to be asked in a certain case of emergency. It was programmed based on the State of New Jersey Emergency Communication Guide Card.

3.4.1 State of New Jersey Emergency Communication Guide Card

In typical emergency situation, there were many hardships burdening both the caller and call receiver mentally as well as physically. These hardships include shock, fear, stress, exhaustion and possibly injury. Also, the caller usually demands help as soon as possible while receiver can only issue assistance with a reasonable amount of information. This, sometimes along with inexperience of call receiver, can cause much confusion and distress between two ends in communication process. Therefore, it was very difficult to keep optimization in

communication and information gathering. To solve this, the State of New Jersey had issued a Emergency Communication Guide Card concerning the communication process when an emergency call takes place. Its purpose was to guide the call receiver to take appropriate action as well as provide only most important question concerning emergency situation. The Guide Card divides the information gathering process into three main parts: basic information, emergency type information and pre arrival instruction.

Basic information was the most seven crucial questions that always needs to be answered. This includes the caller's name, location, number along with emergency's type and victim's consciousness and breathing. This information was required before the call receiver can dispatch assistance. In the case that victim was unconscious, dispatching was required immediately. Furthermore, if the victim had trouble with breathing, which was very dangerous without intercept, the call receiver can instruct patient to give victim some basic treatment assisting breathing, for example, CPR.

Emergency type information was the second stage of information gathering process in the Guide Card. It contains a certain set of questions based on the type of emergency. The purpose of this stage was to collect additional information concerning emergency situation so that the dispatching unit can give out faster and more accurate assessment.

Pre-arrival instruction consisted of action that needed to be taken prior to when dispatching unit successfully arrives at the scene. This also includes precaution that the situation worsens and further action would need to be taken.

The advantage of this Guide Card was call receiving personnel can have a guideline on which action should be taken as well as which question should be asked. It defines a system that

call receiver can easily follow with minimum experience. This helps lessening mental and physical stress of call receiver by eliminating most of thinking effort. Furthermore, by doing so, decision making time would reduce a lot compare to regular method, thus, greatly improve time response delay. The Guide Card also lessens responsibility burdening call receiver, making them more confident and comfortable with the whole process, indirectly calming the caller in panic situation. However, with more than thirty different cases of emergency, physical ask-and-search method would result in a very unnecessary long delay between each stage. In another word, the biggest disadvantage of this Guide Card was it needs call receiver to constantly search for appropriate page where the situation could be applied. Furthermore, concerning data storing method, call receiver must record both questions and answers manually, which was another big delay in response time. It would be much better to generate a specific form for each emergency type that contains all questions that needed to be asked and record answers accordingly. Lastly, it would be more efficient to separate question for caller and instruction for call receiver as it reduce the risk of confusion and mistake.

3.4.2 eGuideCard implementation

With the same psychology behind the State of New Jersey Guide Card, eGuideCard was a program that was designed for minimizing burden for emergency call receiving personnel. However, this digital version of New Jersey Guide Card overcomes most of its predecessor's weakness with the help of programming technology and algorithm. Firstly, instead of having different pages for each case of emergency, eGuideCard only represents the most important page in each stage and later proceeds to most appropriate page based on current page. By encompassing the whole Guide Card into one single program that can decide next action autonomously, the whole ask-and-search process was eliminated. This reduces mental burden of

call receiver to minimum level since all actions would circulate around asking provided questions and recording corresponding answers.

Implementation process:

The first question to ask when implementing a program was which programming language was most appropriated. There were many choices when it comes to advanced programming language like C/C++, Java, Visual Basic, etc. and each one processes its unique strengths and weaknesses. It's very important to ask what the most important features the final product should have because it would save a lot of implementing time for choosing right programming language for those features. In our case, because this program's purpose was to give its user more conformable experience, the most important part of this program was the interface. In another word, the chosen programming language needs to be able to work nicely with customizing interface. In this field, Visual Basic was the best candidate as it deals heavily with interface and forms. On close second place, Java with help of Netbeans IDE can rival Visual Basic with easiness in making and customizing interface. Since there was only a small margin of difference between two programming languages, the decision came down to the group's inexperience with Visual Basic, making Java with Netbeans IDE the final choice.

With Netbeans IDE, developing interface in Java was a very simple and intuitive process of select right components and put them in the appropriate place. In Java, each window was called a Jframe which consists of many lesser items like Textbox, Combobox and label, etc. To add more components, the process would be as easy as drag the chosen item to working Jframe. With the properties panel, initial conditions of the items could be configured with ease. Furthermore, by double click in one item, the IDE goes to source code, where reaction upon

being used of the item could be programmed. A typical view of the IDE could be found in Figure 29.

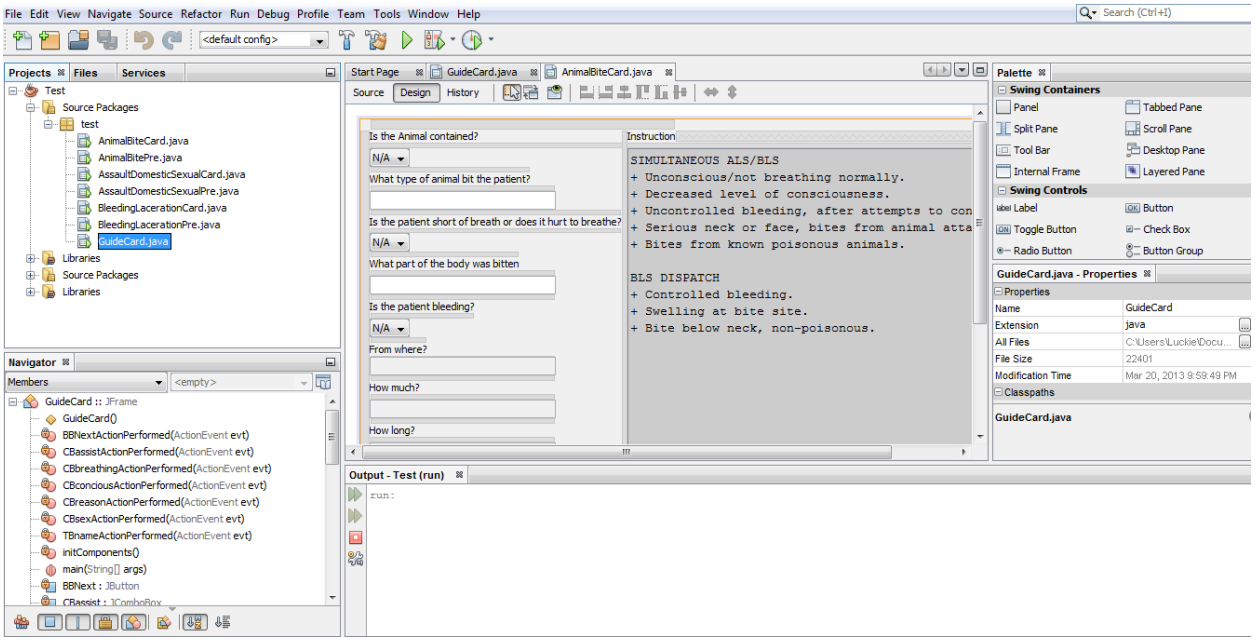

Figure 29 Java with NetBeans IDE

Since eGuideCard was based on the New Jersey Guide Card, it also consists of three main stages: Basic Information, Emergency type Information and Pre Arrival Instruction. Each stage was represented by a Jframe with corresponding questions and instruction. Upon starting the program, user can get to first stage of Basic Information. This stage was a linear conversion from seven basic questions from the New Jersey Guide Card to digital form. Upon answering each question, the program give out specific instruction on which action should be taken next. After filled out all the answers and/or press “Next” button, the user was navigated to another stage.

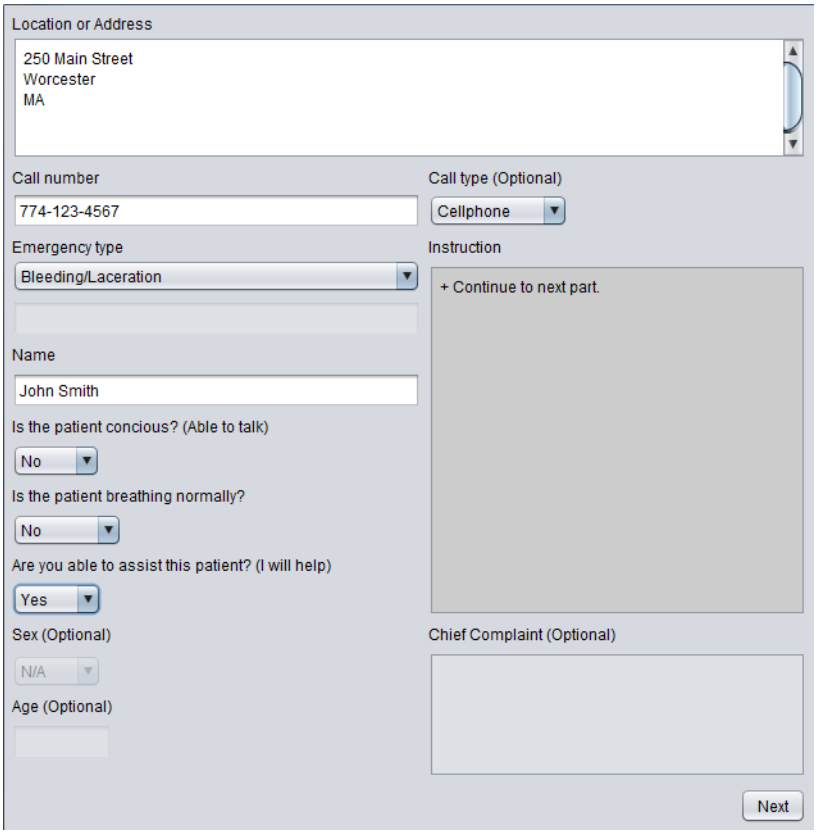

Figure 30 Basic Information interface

The second stage was called Emergency type Information which consists of questions concerning specific type of emergency. While the Basic Information stage was the same, Emergency type Information was varied with different types of emergency. With different emergency, the form provide different set of questions needed to be asked. Therefore, each case of emergency requires a Jframe on its own. Being similar to Basic Information stage, Emergency type stage can also generate instructions based on how the questions were answered. One thing about this stage was through the answers, it can navigate user to another type of emergency. For instance, in case of Assault, if the victim was wounded by weapons like gun or knife, the program lead user to that specific page. Otherwise, when the user select "Next" button, it go to the final stage, Pre-Arrival Instruction (Figure 32).

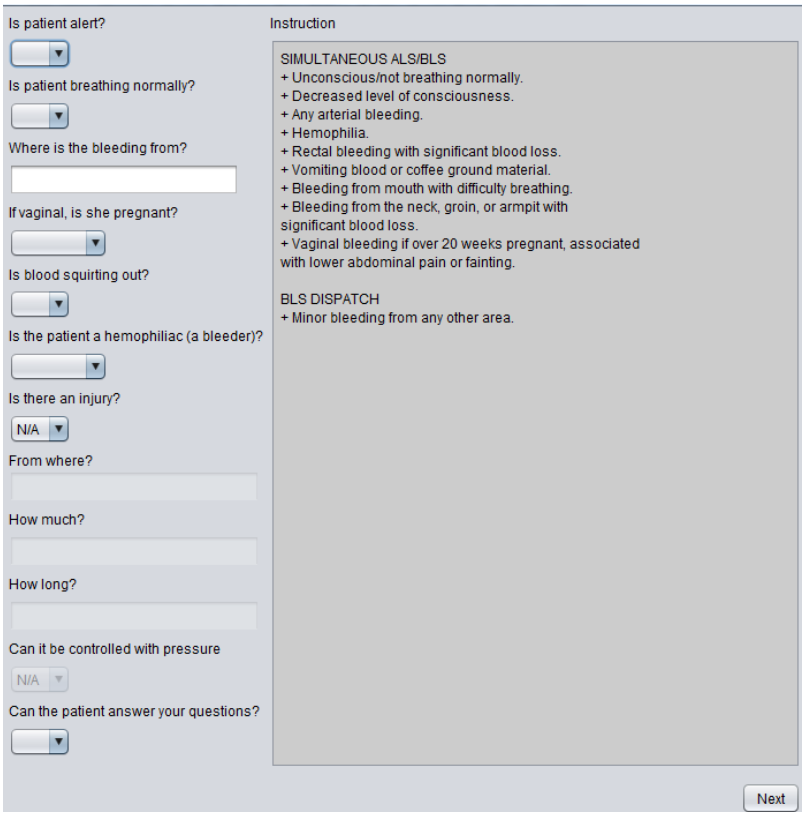

Figure 31 Emergency Type Information

In Pre-Arrival Instruction stage, there was not any question to be asked but, instead, only instruction on which action should be taken prior to when dispatching unit arrives. It also has warning on signs that signify the situation was getting worse.

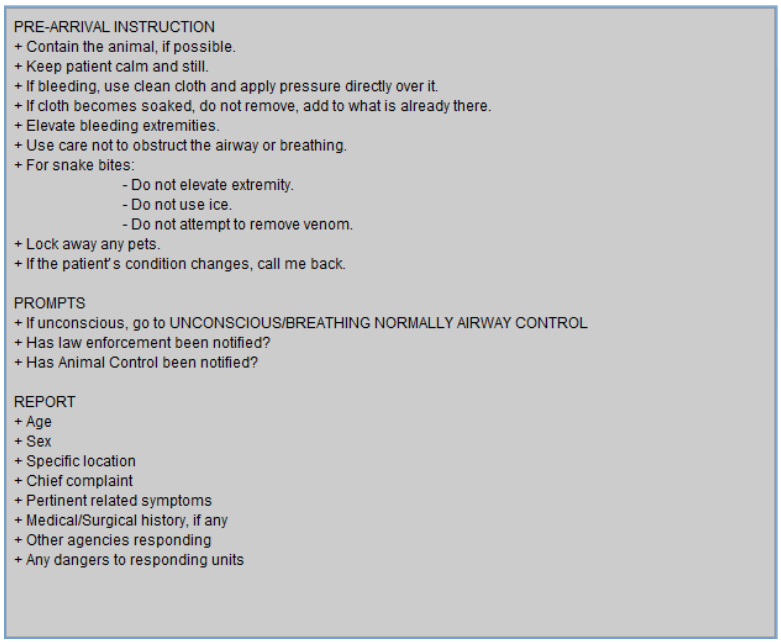

Figure 32 Pre-Arrival Instruction

The first advantage of eGuideCard was it retains all the benefit of using Guide Card in communication. This includes less mental stress was put on call receiver and smaller response time delay. It also reduces the amount of questions asked to minimum, thus, conforming caller. Furthermore, the program lessens call receiver's burden and responsibility, lowering experience requirement. However, the biggest improvement of eGuideCard comparing to its predecessor was the ability to navigate between each stage autonomously. This improvement comes from the algorithm that can make decision based on information gathered. As a result, call receiver does not have to go through the Guide Card for a specific page, therefore, reducing time response delay greatly. Also, by working autonomously, the program reduces risk of mistake caused by confusion. Moreover, for certain questions, the program was designed to utilize multiple-choice answers instead of regular type-to-input answers. The multiple-choice answers introduce some most likely choices (about three to five) and also the choice to use manual recording method. The reason for designing this way was because multiple-choice answer can help users input

information in faster manner as they do not have to enter the whole answer. However, as the amount of choices gets bigger, there was diminishing return and input time starts to grow instead. This was because users have to go through the list to find right answer, increasing input time. Therefore, it would be best to just introduce some most likely choices instead of every choice and give users the choice to input it manually if there was not any matching answer.

However, as there was limitation in time budget, there exist some downsides of the program that could be improved with further enhancement. First of all, the program right now only was implemented with some of the emergency cases for demo purpose. With more development, the program cover all cases in the New Jersey Guide Card. Furthermore, right now the program was very linear between the stages as it cannot go back to previous stage. This could be enhanced in next improvement with the ability to go back in case the users want to fix something. The user interaction at this point was also at minimum level. Ideally, the program would not only provide questions but also additional information regarding dispatching status, hospital availability or traffic condition, etc. However, it needs much more development than current version. Nevertheless, the demo version has successfully fulfilled its basic functions: provide questions that needed to be asked and record corresponding answers.

CHAPTER 4: CONCLUDING REMARKS AND FUTURE RECOMMENDATION

4.1 Concluding remarks

The ultimate purpose of this project was to reduce the response time delay of Emergency Medical Technician 9-1-1 Communication. This was because excessive response time delay can lead to inefficiency inside its system. Reducing the response time can provide many advantages like prolonging lives, reducing in emergency expense and lowering the risk of readmission, etc. In this project, we had successfully archived several tasks concerning 9-1-1 Communication system. This includes investigating in 9-1-1 system and how it work. Moreover, we were able to learn about the standards, laws and legislation concerning 9-1-1 system. Also, we took a look at various States in the United States with their Emergency Communication plan. With those researches, we had learned about not only history of 9-1-1 Communication system but also its functionalities and what has been done to improve the system. This gave us foundations and ideas for later when we had to come up with our own solutions for reducing response time delay. Two solutions that we came up with were applying control theory into 9-1-1 Communication and a program assisting emergency call receiving personnel called eGuideCard. With those, the response time could be decreased by a certain degree to make Emergency Communication system more efficient.

4.2 Future Recommendation

Although the project had successfully fulfilled basic goal of reducing time response delay in Emergency Medical Technician 9-1-1 Communication system, there were still rooms for improvement. Concerning the Control Theory, it was currently at a very simple form. With more data and derivation, it could become much more accurate and reliable. Furthermore, there were many possible improvements regarding eGuideCard as well. First of all, it was still incomplete as

it only at demo stage with only some of emergency cases. Ideally, it would have all more than thirty cases of different emergency type in the New Jersey Guide Card. Also, the program at this moment does not have ability to go back to previous stages, which could be a problem for real usage. Lastly, it would be more helpful if the program can extract and provide additional real-time information along with the questions.

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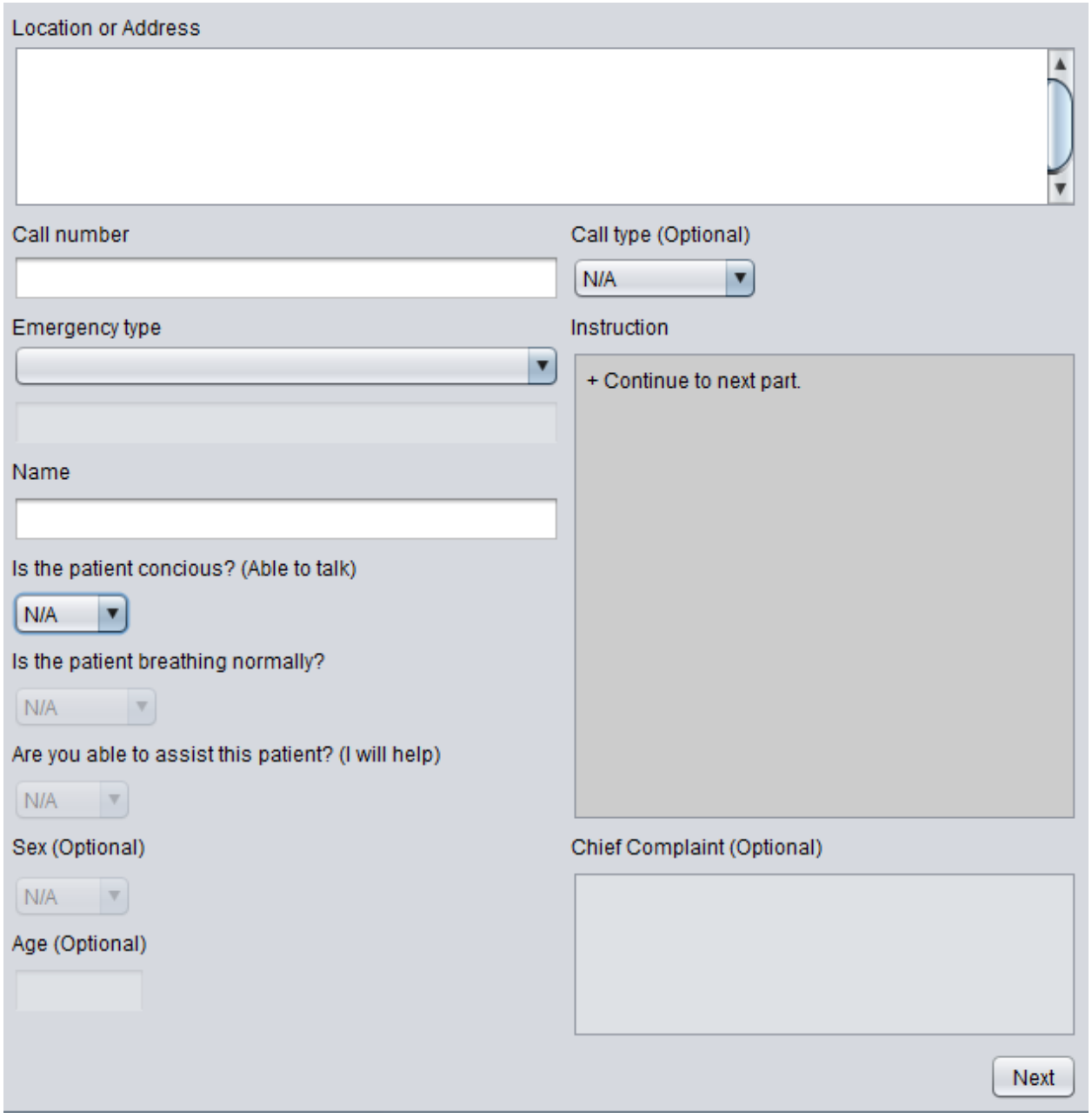
APPENDICIES

Appendix A – eGuideCard source code

GuideCard.java




```
/*
 * To change this template, choose Tools | Templates
 * and open the template in the editor.
 */
package test;

/**
```

```
 *
 * @author ltphuoc
 */
public class GuideCard extends javax.swing.JFrame {

    /**
     * Creates new form GuideCard
     */
    public GuideCard() {
        initComponents();
    }

    /**
     * This method was called from within the constructor to initialize the form.
     * WARNING: Do NOT modify this code. The content of this method was always
     * regenerated by the Form Editor.
     */
    @SuppressWarnings("unchecked")
    // <editor-fold defaultstate="collapsed" desc="Generated Code">
    private void initComponents() {

        BBNext = new javax.swing.JButton();
        TBname = new javax.swing.JTextField();
        jLabel1 = new javax.swing.JLabel();
        jLabel2 = new javax.swing.JLabel();
        jLabel3 = new javax.swing.JLabel();
        TBreasonot = new javax.swing.JTextField();
        CBreason = new javax.swing.JComboBox();
        jLabel4 = new javax.swing.JLabel();
        jTextField1 = new javax.swing.JTextField();
        jComboBox1 = new javax.swing.JComboBox();
        jLabel5 = new javax.swing.JLabel();
        CBconcious = new javax.swing.JComboBox();
        jLabel6 = new javax.swing.JLabel();
        jLabel7 = new javax.swing.JLabel();
        CBbreathing = new javax.swing.JComboBox();
        jScrollPane1 = new javax.swing.JScrollPane();
        TAlocation = new javax.swing.JTextArea();
        jScrollPane2 = new javax.swing.JScrollPane();
        TAinstruction = new javax.swing.JTextArea();
        jLabel8 = new javax.swing.JLabel();
        CBassist = new javax.swing.JComboBox();
        jLabel9 = new javax.swing.JLabel();
        jLabel10 = new javax.swing.JLabel();
        CBsex = new javax.swing.JComboBox();
        jLabel11 = new javax.swing.JLabel();
        jLabel12 = new javax.swing.JLabel();
        TBage = new javax.swing.JTextField();
        jScrollPane3 = new javax.swing.JScrollPane();
        TAcomplaint = new javax.swing.JTextArea();

        setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);
        setTitle("Emergency eGuideCard");
```

```
        BBNext.setText("Next");
        BBNext.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                BBNextActionPerformed(evt);
            }
        });

        TBname.setToolTipText("ABCDEFG");
        TBname.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                TBnameActionPerformed(evt);
            }
        });

        jLabel1.setText("Name");

        jLabel2.setText("Location or Address");

        jLabel3.setText("Emergency type");

        TBreasonot.setEnabled(false);

        CBreason.setMaximumRowCount(3);
        CBreason.setModel(new javax.swing.DefaultComboBoxModel(new String[] { "Animal Bites",
"Assault/Domestic Sexual", "Bleeding/Laceration", "Item 4", "Others" }));
        CBreason.setSelectedIndex(-1);
        CBreason.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                CBreasonActionPerformed(evt);
            }
        });

        jLabel4.setText("Call number");

        jComboBox1.setModel(new javax.swing.DefaultComboBoxModel(new String[] { "N/A", "Cellphone",
"Landphone", "VoIP", " " }));

        jLabel5.setText("Was the patient concious? (Able to talk)");

        CBconcious.setModel(new javax.swing.DefaultComboBoxModel(new String[] { "N/A", "Yes", "No" }));
        CBconcious.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                CBconciousActionPerformed(evt);
            }
        });

        jLabel6.setText("Call type (Optional)");

        jLabel7.setText("Was the patient breathing normally?");

        CBbreathing.setModel(new javax.swing.DefaultComboBoxModel(new String[] { "N/A", "Yes", "No",
"Uncertain" }));
```

```
CBbreathing.setEnabled(false);
CBbreathing.addActionListener(new java.awt.event.ActionListener() {
   public void actionPerformed(java.awt.event.ActionEvent evt) {
      CBbreathingActionPerformed(evt);
   }
});

TAlocation.setColumns(20);
TAlocation.setRows(5);
jScrollPane1.setViewportView(TAlocation);

TAinstruction.setEditable(false);
TAinstruction.setBackground(new java.awt.Color(204, 204, 204));
TAinstruction.setColumns(20);
TAinstruction.setLineWrap(true);
TAinstruction.setRows(5);
TAinstruction.setWrapStyleWord(true);
jScrollPane2.setViewportView(TAinstruction);

jLabel8.setText("Were you able to assist this patient? (I help)");

CBassist.setModel(new javax.swing.DefaultComboBoxModel(new String[] { "N/A", "Yes", "No" }));
CBassist.setEnabled(false);
CBassist.addActionListener(new java.awt.event.ActionListener() {
   public void actionPerformed(java.awt.event.ActionEvent evt) {
      CBassistActionPerformed(evt);
   }
});

jLabel9.setText("Instruction");

jLabel10.setText("Sex (Optional)");

CBsex.setModel(new javax.swing.DefaultComboBoxModel(new String[] { "N/A", "Male", "Female" }));
CBsex.setEnabled(false);
CBsex.addActionListener(new java.awt.event.ActionListener() {
   public void actionPerformed(java.awt.event.ActionEvent evt) {
      CBsexActionPerformed(evt);
   }
});

jLabel11.setText("Age (Optional)");

jLabel12.setText("Chief Complaint (Optional)");

TBage.setEnabled(false);

TAcomplaint.setColumns(20);
TAcomplaint.setRows(5);
TAcomplaint.setEnabled(false);
jScrollPane3.setViewportView(TAcomplaint);

javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
```

```
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addContainerGap()
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addComponent(jScrollPane1)
                    .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, layout.createSequentialGroup()
                        .addGap(0, 0, Short.MAX_VALUE)
                        .addComponent(BBNext))
                    .addGroup(layout.createSequentialGroup()
                        .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                            .addComponent(jTextField1, javax.swing.GroupLayout.PREFERRED_SIZE, 319,
javax.swing.GroupLayout.PREFERRED_SIZE)
                            .addComponent(jLabel4)
                            .addComponent(jLabel5)
                            .addComponent(CBconcious, javax.swing.GroupLayout.PREFERRED_SIZE, 69,
javax.swing.GroupLayout.PREFERRED_SIZE)
                            .addComponent(CBassist, javax.swing.GroupLayout.PREFERRED_SIZE, 70,
javax.swing.GroupLayout.PREFERRED_SIZE)
                            .addComponent(jLabel7)
                            .addComponent(CBbreathing, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                            .addComponent(jLabel8)
                            .addComponent(jLabel10)
                            .addComponent(CBsex, javax.swing.GroupLayout.PREFERRED_SIZE, 70,
javax.swing.GroupLayout.PREFERRED_SIZE)
                            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING, false)
                                .addComponent(TBage, javax.swing.GroupLayout.Alignment.LEADING)
                                .addComponent(jLabel11, javax.swing.GroupLayout.Alignment.LEADING))
                            .addComponent(jLabel2)
                            .addComponent(jLabel3)
                            .addComponent(CBreason, javax.swing.GroupLayout.PREFERRED_SIZE, 319,
javax.swing.GroupLayout.PREFERRED_SIZE)
                            .addComponent(TBreasonot, javax.swing.GroupLayout.PREFERRED_SIZE, 319,
javax.swing.GroupLayout.PREFERRED_SIZE)
                            .addComponent(jLabel1)
                            .addComponent(TBname, javax.swing.GroupLayout.PREFERRED_SIZE, 319,
javax.swing.GroupLayout.PREFERRED_SIZE))
                        .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                        .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                            .addComponent(jScrollPane2)
                            .addComponent(jLabel6)
                            .addComponent(jComboBox1, javax.swing.GroupLayout.PREFERRED_SIZE, 109,
javax.swing.GroupLayout.PREFERRED_SIZE)
                            .addComponent(jLabel9)
                            .addComponent(jLabel12)
                            .addComponent(jScrollPane3, javax.swing.GroupLayout.PREFERRED_SIZE, 295,
javax.swing.GroupLayout.PREFERRED_SIZE))))
                .addContainerGap())
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
```

```
        .addGroup(layout.createSequentialGroup()
            .addContainerGap()
            .addComponent(jLabel2)
            .addGap(2, 2, 2)
            .addComponent(jScrollPane1, javax.swing.GroupLayout.PREFERRED_SIZE, 96,
javax.swing.GroupLayout.PREFERRED_SIZE)
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jLabel4)
                .addComponent(jLabel6))
            .addGap(4, 4, 4)
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                .addComponent(jTextField1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addComponent(jComboBox1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)
                .addGroup(layout.createSequentialGroup()
                    .addComponent(jLabel3)
                    .addGap(2, 2, 2)
                    .addComponent(CBreason, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addGap(6, 6, 6)
                    .addComponent(TBreasonot, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                    .addComponent(jLabel1)
                    .addGap(6, 6, 6)
                    .addComponent(TBname, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                    .addComponent(jLabel5)
                    .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                    .addComponent(CBconcious, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                    .addComponent(jLabel7)
                    .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                    .addComponent(CBbreathing, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                    .addComponent(jLabel8)
                    .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                    .addComponent(CBassist, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
                .addGroup(layout.createSequentialGroup()
                    .addComponent(jLabel9)
                    .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                    .addComponent(jScrollPane2)))
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
            .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                .addGroup(layout.createSequentialGroup()
```

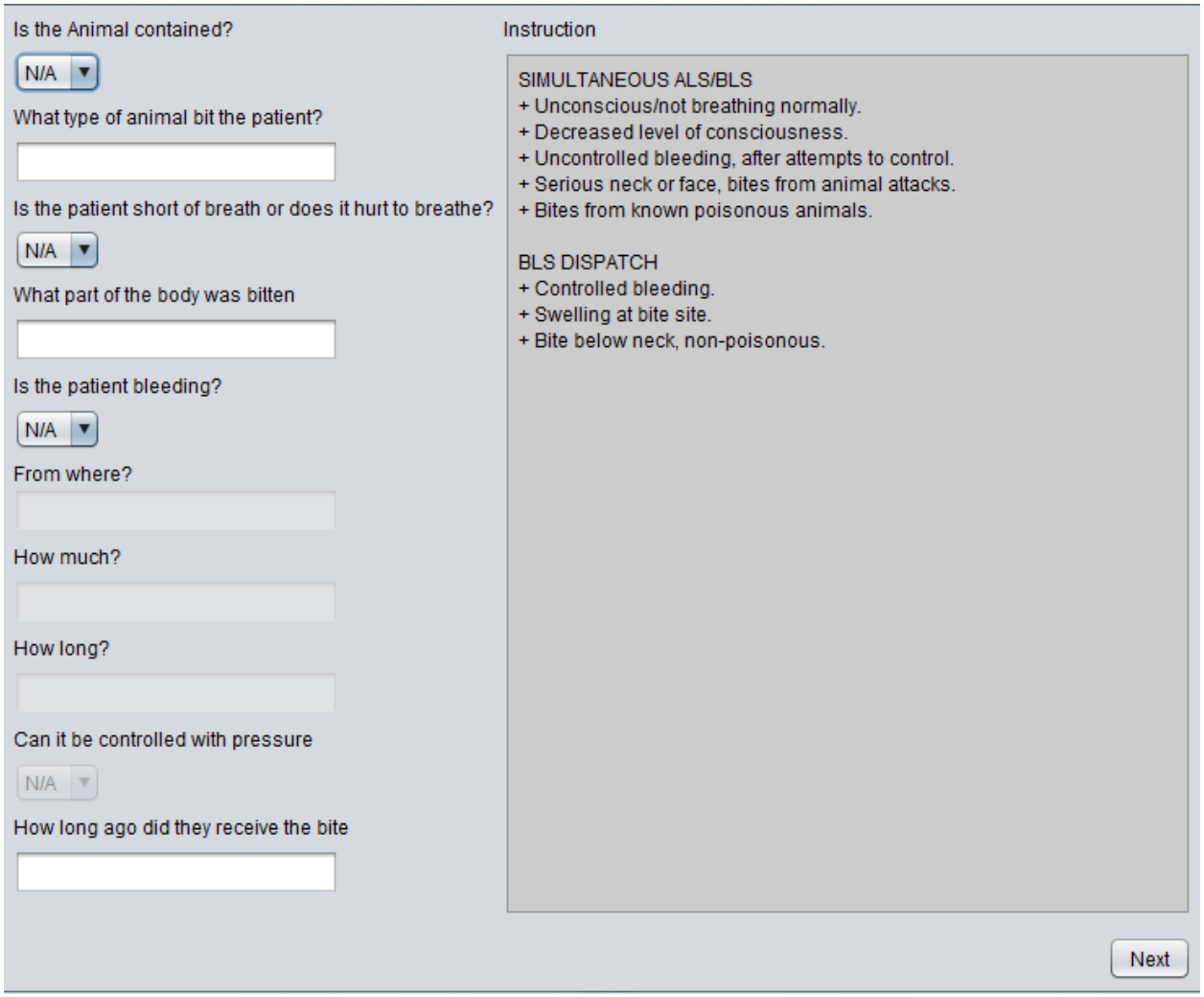
```
                .addComponent(jLabel10)
                .addGap(8, 8, 8)
                .addComponent(CBsex, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(jLabel11)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(TBage, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE))
            .addGroup(layout.createSequentialGroup()
                .addComponent(jLabel12)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(jScrollPane3, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)))
            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 8, Short.MAX_VALUE)
            .addComponent(BBNext)
            .addContainerGap())
        );

        pack();
    }// </editor-fold>

    private void TBnameActionPerformed(java.awt.event.ActionEvent evt) {

        // TODO add your handling code here:
    }

    private void BBNextActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
        switch (CBreason.getSelectedIndex()){
            case 0:
                new AnimalBiteCard().setVisible(true);
                this.setVisible(false);
                break;
            case 1:
                new AssaultDomesticSexualCard().setVisible(true);
                this.setVisible(false);
                break;
            case 2:
                new BleedingLacerationCard().setVisible(true);
                this.setVisible(false);
                break;
            default:
                break;
        }


    }

    private void CBreasonActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
        if (CBreason.getSelectedItem().equals("Others"))
            TBreasonot.setEnabled(true);
```

```
        else
            TBreasonot.setEnabled(false);
    }

    private void CBconciousActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
        switch (CBconcious.getSelectedIndex())
        {
            case 0:    //N/A
                TAinstruction.setText("+ Continue to next part.");
                CBbreathing.setEnabled(false);
                CBassist.setEnabled(false);
                CBsex.setEnabled(false);
                TBage.setEnabled(false);
                TAcomplaint.setEnabled(false);
                break;
            case 1:    //Yes
                CBassist.setEnabled(false);
                CBbreathing.setEnabled(false);
                TAinstruction.setText("+ Get information about sex, age and chief complaint (Optional)\n+ Continue to
next part.");
                CBsex.setEnabled(true);
                TBage.setEnabled(true);
                TAcomplaint.setEnabled(true);
                break;
            case 2:    //No
                CBbreathing.setEnabled(true);
                TAinstruction.setText("+ Dispatch ALS & BLS.\n+ Advise caller help has been dispatched.");
                CBsex.setEnabled(false);
                TBage.setEnabled(false);
                TAcomplaint.setEnabled(false);
                break;
            default:
                break;
        }
    }

    private void CBbreathingActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
        switch (CBbreathing.getSelectedIndex())
        {
            case 0:    //N/A
                CBassist.setEnabled(false);
                TAinstruction.setText("+ Continue to next part.");
                break;
            case 1:    //Yes
                CBassist.setEnabled(false);
                TAinstruction.setText("+ Continue to next part.");
                break;
            case 2:    //No
                CBassist.setEnabled(true);
                TAinstruction.setText("");
                break;
```

```
        case 3:    //Uncertain
            CBassist.setEnabled(false);
            TAinstruction.setText("+ Ask caller to check if the chest rises and come back to the phone.");
        default:
            break;
    }
}

private void CBassistActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:
    {
    switch (CBassist.getSelectedIndex())
    {
        case 0:    //N/A
            TAinstruction.setText("+ Continue to next part.");
            break;
        case 1:    //Yes
            TAinstruction.setText("+ Continue to next part.");
            break;
        case 2:    //No
            TAinstruction.setText("+ I have dispatched help. Don't hang up.\n+ Continue to next part.");
            break;
        default:
            break;
    }
}
}
private void CBsexActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:
}

/**
 * @param args the command line arguments
 */
public static void main(String args[]) {
    /* Set the Nimbus look and feel */
    //<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">
    /* If Nimbus (introduced in Java SE 6) was not available, stay with the default look and feel.
     * For details see http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html
     */
    try {
        for (javax.swing.UIManager.LookAndFeelInfo info : javax.swing.UIManager.getInstalledLookAndFeels()) {
            if ("Nimbus".equals(info.getName())) {
                javax.swing.UIManager.setLookAndFeel(info.getClassName());
                break;
            }
        }
    } catch (ClassNotFoundException ex) {
        java.util.logging.Logger.getLogger(GuideCard.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    } catch (InstantiationException ex) {
        java.util.logging.Logger.getLogger(GuideCard.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
    } catch (IllegalAccessException ex) {
        java.util.logging.Logger.getLogger(GuideCard.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
```

```
        } catch (javax.swing.UnsupportedLookAndFeelException ex) {
            java.util.logging.Logger.getLogger(GuideCard.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
        }
        //</editor-fold>

        /* Create and display the form */
        java.awt.EventQueue.invokeLater(new Runnable() {
            public void run() {
                GuideCard Card1 = new GuideCard();
                Card1.setVisible(true);
            }
        });
    }
    // Variables declaration - do not modify
    private javax.swing.JButton BBNext;
    private javax.swing.JComboBox CBassist;
    private javax.swing.JComboBox CBbreathing;
    private javax.swing.JComboBox CBconcious;
    private javax.swing.JComboBox CBreason;
    private javax.swing.JComboBox CBsex;
    private javax.swing.JTextArea TAcomplaint;
    private javax.swing.JTextArea TAinstruction;
    private javax.swing.JTextArea TAlocation;
    private javax.swing.JTextField TBage;
    private javax.swing.JTextField TBname;
    private javax.swing.JTextField TBreasonot;
    private javax.swing.JComboBox jComboBox1;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel10;
    private javax.swing.JLabel jLabel11;
    private javax.swing.JLabel jLabel12;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JLabel jLabel5;
    private javax.swing.JLabel jLabel6;
    private javax.swing.JLabel jLabel7;
    private javax.swing.JLabel jLabel8;
    private javax.swing.JLabel jLabel9;
    private javax.swing.JScrollPane jScrollPane1;
    private javax.swing.JScrollPane jScrollPane2;
    private javax.swing.JScrollPane jScrollPane3;
    private javax.swing.JTextField jTextField1;
    // End of variables declaration
}
```

AnimalBite.Java




```
/*
 * To change this template, choose Tools | Templates
 * and open the template in the editor.
 */
package test;

/**
 *
 * @author ltphuoc
 */
public class AnimalBiteCard extends javax.swing.JFrame {

    /**
     * Creates new form AnimalBiteCard
     */
    public AnimalBiteCard() {
        initComponents();
    }
```

```
/**
 * This method was called from within the constructor to initialize the form.
 * WARNING: Do NOT modify this code. The content of this method was always
 * regenerated by the Form Editor.
 */
@SuppressWarnings("unchecked")
// <editor-fold defaultstate="collapsed" desc="Generated Code">
private void initComponents() {

    jLabel2 = new javax.swing.JLabel();
    jLabel3 = new javax.swing.JLabel();
    jLabel5 = new javax.swing.JLabel();
    jLabel4 = new javax.swing.JLabel();
    jLabel6 = new javax.swing.JLabel();
    jLabel7 = new javax.swing.JLabel();
    jLabel8 = new javax.swing.JLabel();
    jLabel9 = new javax.swing.JLabel();
    jLabel10 = new javax.swing.JLabel();
    jLabel11 = new javax.swing.JLabel();
    TBanitype = new javax.swing.JTextField();
    TBbodybite = new javax.swing.JTextField();
    TBblwhere = new javax.swing.JTextField();
    TBblmuch = new javax.swing.JTextField();
    CBcontain = new javax.swing.JComboBox();
    CBbreathhard = new javax.swing.JComboBox();
    CBbleed = new javax.swing.JComboBox();
    TBbllong = new javax.swing.JTextField();
    CBblpressure = new javax.swing.JComboBox();
    TBbitelong = new javax.swing.JTextField();
    jLabel1 = new javax.swing.JLabel();
    jScrollPane1 = new javax.swing.JScrollPane();
    jTextArea1 = new javax.swing.JTextArea();
    BBNext = new javax.swing.JButton();

    setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);
    setTitle("Animal Bites");

    jLabel2.setText("Was the Animal contained?");

    jLabel3.setText("What type of animal bit the patient?");

    jLabel5.setText("What part of the body was bitten");

    jLabel4.setText("Was the patient short of breath or does it hurt to breathe?");

    jLabel6.setText("Was the patient bleeding?");

    jLabel7.setText("From where?");

    jLabel8.setText("How much?");

    jLabel9.setText("How long?");
```

```
        jLabel10.setText("Can it be controlled with pressure");

        jLabel11.setText("How long ago did they receive the bite");

        TBblwhere.setEnabled(false);

        TBblmuch.setEnabled(false);

        CBcontain.setModel(new javax.swing.DefaultComboBoxModel(new String[] { "N/A", "Yes", "No" }));

        CBbreathhard.setModel(new javax.swing.DefaultComboBoxModel(new String[] { "N/A", "Yes", "No" }));

        CBbleed.setModel(new javax.swing.DefaultComboBoxModel(new String[] { "N/A", "Yes", "No" }));
        CBbleed.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                CBbleedActionPerformed(evt);
            }
        });

        TBbllong.setEnabled(false);

        CBblpressure.setModel(new javax.swing.DefaultComboBoxModel(new String[] { "N/A", "Yes", "No" }));
        CBblpressure.setEnabled(false);

        jLabel1.setText("Instruction");

        jTextArea1.setEditable(false);
        jTextArea1.setBackground(new java.awt.Color(204, 204, 204));
        jTextArea1.setColumns(20);
        jTextArea1.setRows(5);
        jTextArea1.setText("SIMULTANEOUS ALS/BLS\n+ Unconscious/not breathing normally.\n+ Decreased level of consciousness.\n+ Uncontrolled bleeding, after attempts to control.\n+ Serious neck or face, bites from animal attacks.\n+ Bites from known poisonous animals.\n\nBLS DISPATCH\n+ Controlled bleeding.\n+ Swelling at bite site.\n+ Bite below neck, non-poisonous.");
        jScrollPane1.setViewportView(jTextArea1);

        BBNext.setText("Next");
        BBNext.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                BBNextActionPerformed(evt);
            }
        });

        javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addContainerGap()
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addGroup(layout.createSequentialGroup()
                        .addGap(0, 0, Short.MAX_VALUE)
```

```
                .addComponent(BBNext)
                .addContainerGap())
            .addGroup(layout.createSequentialGroup()
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addComponent(jLabel2)
                    .addComponent(jLabel3)
                    .addComponent(jLabel5)
                    .addComponent(jLabel4)
                    .addComponent(jLabel6)
                    .addComponent(jLabel8)
                    .addComponent(jLabel9)
                    .addComponent(jLabel10)
                    .addComponent(jLabel11)
                    .addComponent(jLabel7)
                    .addComponent(CBcontain, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addComponent(CBbreathhard, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addComponent(CBbleed, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addComponent(TBanitype, javax.swing.GroupLayout.PREFERRED_SIZE, 200,
javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addComponent(CBblpressure, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING, false)
                        .addComponent(TBbitelong, javax.swing.GroupLayout.Alignment.LEADING)
                        .addComponent(TBbllong, javax.swing.GroupLayout.Alignment.LEADING)
                        .addComponent(TBblmuch, javax.swing.GroupLayout.Alignment.LEADING,
javax.swing.GroupLayout.DEFAULT_SIZE, 200, Short.MAX_VALUE)
                        .addComponent(TBblwhere, javax.swing.GroupLayout.Alignment.LEADING)
                        .addComponent(TBbodybite, javax.swing.GroupLayout.Alignment.LEADING)))
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(jLabel1)
                        .addGap(0, 0, Short.MAX_VALUE))
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(jScrollPane1, javax.swing.GroupLayout.DEFAULT_SIZE, 423, Short.MAX_VALUE)
                        .addContainerGap())))
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addContainerGap()
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                    .addComponent(jLabel2)
                    .addComponent(jLabel1))
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addGroup(layout.createSequentialGroup()
                        .addComponent(CBcontain, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                        .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
```

```
                .addComponent(jLabel3)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(TBanitype, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(jLabel4)
                .addGap(5, 5, 5)
                .addComponent(CBbreathhard, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(jLabel5)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(TBbodybite, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(jLabel6)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(CBbleed, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(jLabel7)
                .addGap(1, 1, 1)
                .addComponent(TBblwhere, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(jLabel8)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(TBblmuch, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(jLabel9)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(TBbllong, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(jLabel10)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(CBblpressure, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(jLabel11)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(TBbitelong, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addGap(0, 13, Short.MAX_VALUE))
            .addComponent(jScrollPane1))
        .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
        .addComponent(BBNext)
        .addContainerGap())
    );

    pack();
  }// </editor-fold>
```

```
    private void CBbleedActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
        switch (CBbleed.getSelectedIndex()){
            case 0:     //N/A
                TBblwhere.setEnabled(false);
                TBblmuch.setEnabled(false);
                TBbllong.setEnabled(false);
                CBblpressure.setEnabled(false);
                break;
            case 1:     //Yes
                TBblwhere.setEnabled(true);
                TBblmuch.setEnabled(true);
                TBbllong.setEnabled(true);
                CBblpressure.setEnabled(true);
                break;
            case 2:     //No
                TBblwhere.setEnabled(false);
                TBblmuch.setEnabled(false);
                TBbllong.setEnabled(false);
                CBblpressure.setEnabled(false);
                break;
            default:
                break;
        }
    }

    private void BBNextActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
        this.setVisible(false);
        AnimalBitePre Card3 = new AnimalBitePre();
        Card3.setVisible(true);
    }

    /**
     * @param args the command line arguments
     */
    public static void main(String args[]) {
        /* Set the Nimbus look and feel */
        //<editor-fold defaultstate="collapsed" desc=" Look and feel setting code (optional) ">
        /* If Nimbus (introduced in Java SE 6) was not available, stay with the default look and feel.
         * For details see http://download.oracle.com/javase/tutorial/uiswing/lookandfeel/plaf.html
         */
        try {
            for (javax.swing.UIManager.LookAndFeelInfo info : javax.swing.UIManager.getInstalledLookAndFeels()) {
                if ("Nimbus".equals(info.getName())) {
                    javax.swing.UIManager.setLookAndFeel(info.getClassName());
                    break;
                }
            }
        } catch (ClassNotFoundException ex) {
            java.util.logging.Logger.getLogger(AnimalBiteCard.class.getName()).log(java.util.logging.Level.SEVERE, null,
ex);
```

```
        } catch (InstantiationException ex) {
            java.util.logging.Logger.getLogger(AnimalBiteCard.class.getName()).log(java.util.logging.Level.SEVERE, null,
ex);
        } catch (IllegalAccessException ex) {
            java.util.logging.Logger.getLogger(AnimalBiteCard.class.getName()).log(java.util.logging.Level.SEVERE, null,
ex);
        } catch (javax.swing.UnsupportedLookAndFeelException ex) {
            java.util.logging.Logger.getLogger(AnimalBiteCard.class.getName()).log(java.util.logging.Level.SEVERE, null,
ex);
        }
        //</editor-fold>

        /* Create and display the form */
        java.awt.EventQueue.invokeLater(new Runnable() {
            public void run() {
                new AnimalBiteCard().setVisible(true);
            }
        });
    }
    // Variables declaration - do not modify
    private javax.swing.JButton BBNext;
    private javax.swing.JComboBox CBbleed;
    private javax.swing.JComboBox CBblpressure;
    private javax.swing.JComboBox CBbreathhard;
    private javax.swing.JComboBox CBcontain;
    private javax.swing.JTextField TBanitype;
    private javax.swing.JTextField TBbitelong;
    private javax.swing.JTextField TBbllong;
    private javax.swing.JTextField TBblmuch;
    private javax.swing.JTextField TBblwhere;
    private javax.swing.JTextField TBbodybite;
    private javax.swing.JLabel jLabel1;
    private javax.swing.JLabel jLabel10;
    private javax.swing.JLabel jLabel11;
    private javax.swing.JLabel jLabel2;
    private javax.swing.JLabel jLabel3;
    private javax.swing.JLabel jLabel4;
    private javax.swing.JLabel jLabel5;
    private javax.swing.JLabel jLabel6;
    private javax.swing.JLabel jLabel7;
    private javax.swing.JLabel jLabel8;
    private javax.swing.JLabel jLabel9;
    private javax.swing.JScrollPane jScrollPane1;
    private javax.swing.JTextArea jTextArea1;
    // End of variables declaration
}
```

AnimalPre.Java

PRE-ARRIVAL INSTRUCTION
+ Contain the animal, if possible.
+ Keep patient calm and still.
+ If bleeding, use clean cloth and apply pressure directly over it.
+ If cloth becomes soaked, do not remove, add to what is already there.
+ Elevate bleeding extremities.
+ Use care not to obstruct the airway or breathing.
+ For snake bites:
    - Do not elevate extremity.
    - Do not use ice.
    - Do not attempt to remove venom.
+ Lock away any pets.
+ If the patient's condition changes, call me back.

PROMPTS
+ If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL
+ Has law enforcement been notified?
+ Has Animal Control been notified?

REPORT
+ Age
+ Sex
+ Specific location
+ Chief complaint
+ Pertinent related symptoms
+ Medical/Surgical history, if any
+ Other agencies responding
+ Any dangers to responding units

Appendix B - FCC PSAP Registry Massachusetts

FCC Master PSAP Registry

Legend

Type of Change	Description
NC	No Changes have been made.
O	Orphaned PSAP no longer considered a primary call taking answering point. Refrain from using these in future filings.
A	PSAP was added since the original posting of the FCC Registry.
M	PSAP Name, State, County or City text has been modified since the original posting.
S	Secondary PSAP associated with a Primary PSAP. Use the Primary PSAP in future filings.

PSAP ID	PSAP Name	State	County	City	Type of Change	Comments
7669	Abington Police	MA	Plymouth	Abington	A	PSAP was added since the original posting of the FCC Registry.
7670	Acton Police	MA	Middlesex	Acton	A	PSAP was added since the original posting of the FCC Registry.
3149	Acushnet Police Department	MA	Bristol	Acushnet	NC	
7671	Adams Police	MA	Berkshire	Adams	A	PSAP was added since the original posting of the FCC Registry.
7672	Agawam Police	MA	Hampden	Agawam	A	PSAP was added since the original posting of the FCC Registry.
7673	Amesbury Police	MA	Essex	Amesbury	A	PSAP was added since the original posting of the FCC Registry.
7674	Amherst Communications	MA	Hampshire	Amherst	A	PSAP was added since the original posting of the FCC Registry.
7675	Andover Police	MA	Essex	Andover	A	PSAP was added since the original posting of the FCC Registry.
7676	Arlington Communications	MA	Middlesex	Arlington	A	PSAP was added since the original posting of the FCC Registry.
7677	Ashburnham Police	MA	Worcester	Ashburnham	A	PSAP was added since the original posting of the FCC Registry.
7678	Ashby Police	MA	Middlesex	Ashby	A	PSAP was added since the original posting of the FCC Registry.
3150	Ashland Police Department	MA	Middlesex	Ashland	NC	
7679	Athol Police	MA	Worcester	Athol	A	PSAP was added since the original posting of the FCC Registry.
7680	Attleboro Police	MA	Bristol	Attleboro	A	PSAP was added since the original posting of the FCC Registry.

7681	Auburn Police	MA	Worcester	Auburn	A	PSAP was added since the original posting of the FCC Registry.
7682	Avon Police	MA	Norfolk	Avon	A	PSAP was added since the original posting of the FCC Registry.
7683	Ayer Police	MA	Middlesex	Ayer	A	PSAP was added since the original posting of the FCC Registry.
3151	Barnstable County Sheriffs Department	MA	Barnstable	Otis Angb Falmouth	M	PSAP Name, State, County or City text has been modified since the original posting of the FCC Registry.
3152	Barnstable Police Department	MA	Barnstable	Hyannis	NC	
7684	Barre Police	MA	Worcester	Barre	A	PSAP was added since the original posting of the FCC Registry.
7685	Bedford Police	MA	Middlesex	Bedford	A	PSAP was added since the original posting of the FCC Registry.
7686	Belchertown Police	MA	Hampshire	Belchertown	A	PSAP was added since the original posting of the FCC Registry.
3153	Bellingham Police Department	MA	Norfolk	Bellingham	NC	
7687	Belmont Public Safety	MA	Middlesex	Belmont	A	PSAP was added since the original posting of the FCC Registry.
7688	Berkley Police	MA	Bristol	Berkley	A	PSAP was added since the original posting of the FCC Registry.
3154	Berkshire County Sheriff Communication Center	MA	Berkshire	Pittsfield	NC	
7689	Berlin Police	MA	Worcester	Berlin	A	PSAP was added since the original posting of the FCC Registry.
7690	Beverly Police	MA	Essex	Beverly	A	PSAP was added since the original posting of the FCC Registry.
7691	Billerica Police	MA	Middlesex	Billerica	A	PSAP was added since the original posting of the FCC Registry.
7692	Blackstone Police	MA	Worcester	Blackstone	A	PSAP was added since the original posting of the FCC Registry.
7693	Bolton Police	MA	Worcester	Bolton	A	PSAP was added since the original posting of the FCC Registry.
3155	Boston Fire Department	MA	Suffolk	Boston	S	PSAP was either a Duplicate or a Secondary PSAP. Calls were handled by PSAP #3156
3156	Boston Police Department	MA	Suffolk	Boston	NC	
7694	Bourne Police	MA	Barnstable	Bourne	A	PSAP was added since the original posting of the FCC Registry.

7695	Boxborough Police	MA	Middlesex	Boxborough	A	PSAP was added since the original posting of the FCC Registry.
7696	Boxford Police	MA	Essex	Boxford	A	PSAP was added since the original posting of the FCC Registry.
7697	Boylston Police	MA	Worcester	Boylston	A	PSAP was added since the original posting of the FCC Registry.
7698	Braintree Police	MA	Norfolk	Braintree	A	PSAP was added since the original posting of the FCC Registry.
7699	Brewster Police	MA	Barnstable	Brewster	O	Orphaned PSAP no longer considered a primary call taking answering point. Refrain from using these in future filings.
7700	Bridgewater Police	MA	Plymouth	Bridgewater	A	PSAP was added since the original posting of the FCC Registry.
7701	Brockton Police	MA	Plymouth	Brockton	A	PSAP was added since the original posting of the FCC Registry.
7702	Brookline Police	MA	Norfolk	Brookline	A	PSAP was added since the original posting of the FCC Registry.
7703	Burlington Police	MA	Middlesex	Burlington	A	PSAP was added since the original posting of the FCC Registry.
3163	Cambridge Emergency Communications	MA	Middlesex	Cambridge	M	PSAP Name, State, County or City text has been modified since the original posting of the FCC Registry.
3157	Cambridge Police Department	MA	Middlesex	Cambridge	O	Orphaned PSAP no longer considered a primary call taking answering point. Refrain from using these in future filings.
3158	Canton Police Department	MA	Norfolk	Canton	NC	
7704	Carlisle Police	MA	Middlesex	Carlisle	A	PSAP was added since the original posting of the FCC Registry.
7705	Carver Police	MA	Plymouth	Carver	A	PSAP was added since the original posting of the FCC Registry.
7706	Charlton Police	MA	Worcester	Charlton	A	PSAP was added since the original posting of the FCC Registry.
7707	Chelmsford Police	MA	Middlesex	Chelmsford	A	PSAP was added since the original posting of the FCC Registry.
7708	Chelsea Emergency Communications	MA	Suffolk	Chelsea	A	PSAP was added since the original posting of the FCC Registry.
7709	Chicopee Police	MA	Hampden	Chicopee	A	PSAP was added since the original posting of the FCC Registry.

7710	Clinton Police	MA	Worcester	Clinton	A	PSAP was added since the original posting of the FCC Registry.
7711	Cohasset Police	MA	Norfolk	Cohasset	O	Orphaned PSAP no longer considered a primary call taking answering point. Refrain from using these in future filings.
7712	Concord Police	MA	Middlesex	Concord	A	PSAP was added since the original posting of the FCC Registry.
3159	Dalton Communication Center	MA	Berkshire	Dalton	NC	
7713	Danvers Police	MA	Essex	Danvers	A	PSAP was added since the original posting of the FCC Registry.
3160	Dartmouth Police Department	MA	Bristol	Dartmouth	NC	
7714	Dedham Police	MA	Norfolk	Dedham	A	PSAP was added since the original posting of the FCC Registry.
3161	Dennis Police Department	MA	Barnstable	South Dennis	NC	
7715	Devens	MA	Middlesex	Devens	A	PSAP was added since the original posting of the FCC Registry.
7716	Dighton Police	MA	Bristol	Dighton	A	PSAP was added since the original posting of the FCC Registry.
7717	Douglas Police	MA	Worcester	Douglas	A	PSAP was added since the original posting of the FCC Registry.
3162	Dover Police Department	MA	Norfolk	Dover	M	PSAP Name, State, County or City text has been modified since the original posting of the FCC Registry.
7718	Dracut Police	MA	Middlesex	Dracut	A	PSAP was added since the original posting of the FCC Registry.
7719	Dudley Police	MA	Worcester	Dudley	A	PSAP was added since the original posting of the FCC Registry.
7720	Dukes County Sheriff	MA	Dukes	Edgartown	A	PSAP was added since the original posting of the FCC Registry.
7721	Duxbury Police	MA	Plymouth	Duxbury	A	PSAP was added since the original posting of the FCC Registry.
7722	East Bridgewater Police	MA	Plymouth	East Bridgewater	A	PSAP was added since the original posting of the FCC Registry.
7723	East Longmeadow Police	MA	Hampden	East Longmeadow	A	PSAP was added since the original posting of the FCC Registry.
7724	Eastham Police	MA	Barnstable	Eastham	A	PSAP was added since the original posting of the FCC Registry.
7725	Easthampton Police	MA	Hampshire	Easthampton	A	PSAP was added since the original posting of the

						FCC Registry.
7726	Easton Police	MA	Bristol	North Easton	A	PSAP was added since the original posting of the FCC Registry.
7727	Essex Communications	MA	Essex	Essex	A	PSAP was added since the original posting of the FCC Registry.
7728	Everett Communications	MA	Middlesex	Everett	A	PSAP was added since the original posting of the FCC Registry.
3164	Fairhaven Police Department	MA	Bristol	Fairhaven	NC	
3165	Fall River Police Department	MA	Bristol	Fall River	NC	
3166	Falmouth Police Department	MA	Barnstable	Falmouth	O	Orphaned PSAP no longer considered a primary call taking answering point. Refrain from using these in future filings.
7729	Fitchburg Police	MA	Worcester	Fitchburg	A	PSAP was added since the original posting of the FCC Registry.
7730	Foxboro Police	MA	Norfolk	Foxboro	A	PSAP was added since the original posting of the FCC Registry.
3167	Framingham Police Department	MA	Middlesex	Framingham	NC	
3168	Franklin Police Department	MA	Norfolk	Franklin	NC	
3169	Freetown Police Department	MA	Bristol	East Freetown	NC	
7731	Gardner Police	MA	Worcester	Gardner	A	PSAP was added since the original posting of the FCC Registry.
7732	Georgetown Police	MA	Essex	Georgetown	A	PSAP was added since the original posting of the FCC Registry.
7733	Gloucester Police	MA	Essex	Gloucester	A	PSAP was added since the original posting of the FCC Registry.
7734	Grafton Police	MA	Worcester	Grafton	A	PSAP was added since the original posting of the FCC Registry.
7735	Granby Police	MA	Hampshire	Granby	A	PSAP was added since the original posting of the FCC Registry.
7736	Great Barrington Police	MA	Berkshire	Great Barrington	A	PSAP was added since the original posting of the FCC Registry.
7737	Greenfield Police	MA	Franklin	Greenfield	A	PSAP was added since the original posting of the FCC Registry.
7738	Groton Police	MA	Middlesex	Groton	A	PSAP was added since the original posting of the FCC Registry.
7739	Groveland Police	MA	Essex	Groveland	A	PSAP was added since the original posting of the FCC Registry.

7740	Hadley Police	MA	Hampshire	Hadley	A	PSAP was added since the original posting of the FCC Registry.
7741	Halifax Police	MA	Plymouth	Halifax	A	PSAP was added since the original posting of the FCC Registry.
7742	Hamilton/wenham Police	MA	Essex	Hamilton	A	PSAP was added since the original posting of the FCC Registry.
7743	Hampden Police	MA	Hampden	Hampden	A	PSAP was added since the original posting of the FCC Registry.
7744	Hanover Police	MA	Plymouth	Hanover	A	PSAP was added since the original posting of the FCC Registry.
7745	Hanscom Afb (military)	MA	Middlesex	Bedford	A	PSAP was added since the original posting of the FCC Registry.
7746	Hanson Police	MA	Plymouth	Hanson	A	PSAP was added since the original posting of the FCC Registry.
7747	Harvard Police	MA	Worcester	Harvard	A	PSAP was added since the original posting of the FCC Registry.
7748	Haverhill Police	MA	Essex	Haverhill	A	PSAP was added since the original posting of the FCC Registry.
7749	Hingham Police	MA	Plymouth	Hingham	O	Orphaned PSAP no longer considered a primary call taking answering point. Refrain from using these in future filings.
7750	Holbrook Police	MA	Norfolk	Holbrook	A	PSAP was added since the original posting of the FCC Registry.
7751	Holden Police	MA	Worcester	Holden	A	PSAP was added since the original posting of the FCC Registry.
3170	Holliston Police Department	MA	Middlesex	Holliston	NC	
7752	Holyoke Police	MA	Hampden	Holyoke	A	PSAP was added since the original posting of the FCC Registry.
7753	Hopedale Police	MA	Worcester	Hopedale	O	Orphaned PSAP no longer considered a primary call taking answering point. Refrain from using these in future filings.
3171	Hopkinton Police Department	MA	Middlesex	Hopkinton	NC	
7754	Hubbardston Police	MA	Worcester	Hubbardston	O	Orphaned PSAP no longer considered a primary call taking answering point. Refrain from using these in future filings.
7755	Hudson Police	MA	Middlesex	Hudson	A	PSAP was added since the original posting of the FCC Registry.

7756	Hull Police	MA	Plymouth	Hull	O	Orphaned PSAP no longer considered a primary call taking answering point. Refrain from using these in future filings.
7757	Ipswich Police	MA	Essex	Ipswich	A	PSAP was added since the original posting of the FCC Registry.
7758	Kingston Police	MA	Plymouth	Kingston	A	PSAP was added since the original posting of the FCC Registry.
7759	Lakeville Police	MA	Plymouth	Lakeville	A	PSAP was added since the original posting of the FCC Registry.
7760	Lancaster Communications	MA	Worcester	Lancaster	A	PSAP was added since the original posting of the FCC Registry.
7761	Lawrence Police	MA	Essex	Lawrence	A	PSAP was added since the original posting of the FCC Registry.
3172	Lee Communication Center	MA	Berkshire	Lee	NC	
7762	Leicester Police	MA	Worcester	Leicester	A	PSAP was added since the original posting of the FCC Registry.
7763	Leominster Police	MA	Worcester	Leominster	A	PSAP was added since the original posting of the FCC Registry.
7764	Lexington Police	MA	Middlesex	Lexington	A	PSAP was added since the original posting of the FCC Registry.
7765	Lincoln Police	MA	Middlesex	Lincoln	A	PSAP was added since the original posting of the FCC Registry.
7766	Littleton Police	MA	Middlesex	Littleton	A	PSAP was added since the original posting of the FCC Registry.
7767	Longmeadow Police	MA	Hampden	Longmeadow	A	PSAP was added since the original posting of the FCC Registry.
7768	Lowell Police	MA	Middlesex	Lowell	A	PSAP was added since the original posting of the FCC Registry.
7769	Ludlow Police	MA	Hampden	Ludlow	A	PSAP was added since the original posting of the FCC Registry.
7770	Lunenburg Fire	MA	Worcester	Lunenburg	A	PSAP was added since the original posting of the FCC Registry.
7771	Lynn Police	MA	Essex	Lynn	A	PSAP was added since the original posting of the FCC Registry.
7772	Lynnfield Police	MA	Essex	Lynnfield	A	PSAP was added since the original posting of the FCC Registry.
7773	Malden Police	MA	Middlesex	Malden	A	PSAP was added since the original posting of the FCC Registry.
7774	Manchester Police	MA	Essex	Manchester	A	PSAP was added since the original posting of the

						FCC Registry.
7775	Mansfield Police	MA	Bristol	Mansfield	A	PSAP was added since the original posting of the FCC Registry.
7776	Marblehead Police	MA	Essex	Marblehead	A	PSAP was added since the original posting of the FCC Registry.
3173	Marion Police Department	MA	Plymouth	Marion	NC	
7777	Marlboro Police	MA	Middlesex	Marlboro	A	PSAP was added since the original posting of the FCC Registry.
7778	Marshfield Police	MA	Plymouth	Marshfield	A	PSAP was added since the original posting of the FCC Registry.
8137	Massachusetts State Police Grafton	MA	Worcester	Grafton	A	PSAP was added since the original posting of the FCC Registry.
3180	Massachusetts State Police South Boston	MA	Suffolk	South Boston	M	PSAP Name, State, County or City text has been modified since the original posting of the FCC Registry.
3174	Massachusetts State Police-danvers	MA	Essex	Danvers	M	PSAP Name, State, County or City text has been modified since the original posting of the FCC Registry.
3175	Massachusetts State Police-framingham	MA	Middlesex	Framingham	NC	
3176	Massachusetts State Police-holden	MA	Worcester	Holden	M	PSAP Name, State, County or City text has been modified since the original posting of the FCC Registry.
3177	Massachusetts State Police-middleboro	MA	Plymouth	Middleboro	NC	
3178	Massachusetts State Police-northampton	MA	Hampshire	Northampton	NC	
3179	Massachusetts State Police-shelburne Falls	MA	Franklin	Shelburne Falls	NC	
7779	Mattapoisett Police	MA	Plymouth	Mattapoisett	A	PSAP was added since the original posting of the FCC Registry.
7780	Maynard Police	MA	Middlesex	Maynard	A	PSAP was added since the original posting of the FCC Registry.
3181	Medfield Police Department	MA	Norfolk	Medfield	NC	
7781	Medford Police	MA	Middlesex	Medford	A	PSAP was added since the original posting of the FCC Registry.
3182	Medway Police Department	MA	Norfolk	Medway	NC	
7782	Melrose Police	MA	Middlesex	Melrose	A	PSAP was added since the original posting of the FCC Registry.
7783	Mendon Police	MA	Worcester	Mendon	A	PSAP was added since the original posting of the

						FCC Registry.
7784	Merrimac Police	MA	Middlesex	Merrimac	A	PSAP was added since the original posting of the FCC Registry.
7785	Methuen Police	MA	Essex	Methuen	A	PSAP was added since the original posting of the FCC Registry.
7786	Middleboro Police	MA	Plymouth	Middleboro	A	PSAP was added since the original posting of the FCC Registry.
7787	Middleton Fire	MA	Essex	Middleton	A	PSAP was added since the original posting of the FCC Registry.
7788	Milford Police	MA	Worcester	Milford	A	PSAP was added since the original posting of the FCC Registry.
7789	Millbury Police	MA	Worcester	Millbury	A	PSAP was added since the original posting of the FCC Registry.
3183	Millis Police Department	MA	Norfolk	Millis	NC	
7790	Millville Police	MA	Worcester	Millville	O	Orphaned PSAP no longer considered a primary call taking answering point. Refrain from using these in future filings.
7791	Milton Police	MA	Norfolk	Milton	A	PSAP was added since the original posting of the FCC Registry.
7792	Monson Police	MA	Hampden	Monson	A	PSAP was added since the original posting of the FCC Registry.
7793	Montague Police	MA	Franklin	Turners Falls	A	PSAP was added since the original posting of the FCC Registry.
7794	Nahant Police	MA	Essex	Nahant	A	PSAP was added since the original posting of the FCC Registry.
7795	Nantucket Police	MA	Nantucket	Nantucket	A	PSAP was added since the original posting of the FCC Registry.
8400	Nashoba Recc (regional Emergency Communications Center	MA	Worcester	Devens	A	PSAP was added since the original posting of the FCC Registry.
3184	Natick Police Department	MA	Middlesex	Natick	NC	
7796	Needham Police	MA	Norfolk	Needham	A	PSAP was added since the original posting of the FCC Registry.
3185	New Bedford Police Department	MA	Bristol	New Bedford	NC	
7797	New Braintree State Police	MA	Worcester	New Braintree	A	PSAP was added since the original posting of the FCC Registry.
7798	Newbury Police	MA	Essex	Newbury	A	PSAP was added since the original posting of the FCC Registry.
7799	Newburyport Police	MA	Essex	Newburyport	A	PSAP was added since the original posting of the FCC Registry.

7800	Newton Police	MA	Middlesex	Newton	A	PSAP was added since the original posting of the FCC Registry.
3186	Norfolk Police Department	MA	Norfolk	Norfolk	NC	
7801	North Adams Police	MA	Berkshire	North Adams	A	PSAP was added since the original posting of the FCC Registry.
7802	North Andover Police	MA	Essex	North Andover	A	PSAP was added since the original posting of the FCC Registry.
7803	North Attleboro Police	MA	Bristol	North Attleboro	A	PSAP was added since the original posting of the FCC Registry.
7804	North Reading Police	MA	Middlesex	North Reading	A	PSAP was added since the original posting of the FCC Registry.
7805	Northampton Communications	MA	Hampshire	Northampton	A	PSAP was added since the original posting of the FCC Registry.
7806	Northboro Police	MA	Worcester	Northboro	A	PSAP was added since the original posting of the FCC Registry.
7807	Northbridge Police	MA	Worcester	Whitinsville	A	PSAP was added since the original posting of the FCC Registry.
7808	Norton Communications	MA	Bristol	Norton	A	PSAP was added since the original posting of the FCC Registry.
7809	Norwell Police	MA	Plymouth	Norwell	O	Orphaned PSAP no longer considered a primary call taking answering point. Refrain from using these in future filings.
3187	Norwood Police Department	MA	Norfolk	Norwood	NC	
7810	Oxford Police	MA	Worcester	Oxford	A	PSAP was added since the original posting of the FCC Registry.
7811	Palmer Police	MA	Hampden	Palmer	A	PSAP was added since the original posting of the FCC Registry.
7812	Paxton Communications	MA	Worcester	Paxton	A	PSAP was added since the original posting of the FCC Registry.
7813	Peabody Police	MA	Essex	Peabody	A	PSAP was added since the original posting of the FCC Registry.
7814	Pembroke Police	MA	Plymouth	Pembroke	A	PSAP was added since the original posting of the FCC Registry.
7815	Pepperell Police	MA	Middlesex	Pepperell	A	PSAP was added since the original posting of the FCC Registry.
3188	Pittsfield Police Department	MA	Berkshire	Pittsfield	NC	
7816	Plainville Police	MA	Norfolk	Plainville	A	PSAP was added since the original posting of the FCC Registry.

3189	Plymouth County Communications Center	MA	Plymouth	Kingston	O	Orphaned PSAP no longer considered a primary call taking answering point. Refrain from using these in future filings.
3190	Plymouth County Sheriffs Department Emergency Communications	MA	Plymouth	Plymouth	O	Orphaned PSAP no longer considered a primary call taking answering point. Refrain from using these in future filings.
7905	Plymouth Police	MA	Plymouth	Plymouth	A	PSAP was added since the original posting of the FCC Registry.
7817	Princeton Police	MA	Worcester	Princeton	A	PSAP was added since the original posting of the FCC Registry.
7818	Provincetown Police	MA	Barnstable	Provincetown	A	PSAP was added since the original posting of the FCC Registry.
7819	Quincy Police	MA	Norfolk	Quincy	A	PSAP was added since the original posting of the FCC Registry.
7820	Randolph Police	MA	Norfolk	Randolph	A	PSAP was added since the original posting of the FCC Registry.
7821	Raynham Police	MA	Bristol	Raynham	A	PSAP was added since the original posting of the FCC Registry.
7822	Reading Police	MA	Middlesex	Reading	A	PSAP was added since the original posting of the FCC Registry.
7823	Rehoboth Police	MA	Bristol	Rehoboth	A	PSAP was added since the original posting of the FCC Registry.
7824	Revere Fire	MA	Suffolk	Revere	A	PSAP was added since the original posting of the FCC Registry.
7825	Rochester Communications	MA	Plymouth	Rochester	A	PSAP was added since the original posting of the FCC Registry.
7826	Rockland Police	MA	Plymouth	Rockland	A	PSAP was added since the original posting of the FCC Registry.
7827	Rockport Police	MA	Essex	Rockport	A	PSAP was added since the original posting of the FCC Registry.
7828	Rowley Police	MA	Essex	Rowley	A	PSAP was added since the original posting of the FCC Registry.
7829	Rutland Fire	MA	Worcester	Rutland	A	PSAP was added since the original posting of the FCC Registry.
7830	Salem Police	MA	Essex	Salem	A	PSAP was added since the original posting of the FCC Registry.
7831	Salisbury Police	MA	Essex	Salisbury	A	PSAP was added since the original posting of the FCC Registry.

7832	Sandwich Police	MA	Barnstable	Sandwich	A	PSAP was added since the original posting of the FCC Registry.
7833	Saugus Police	MA	Essex	Saugus	A	PSAP was added since the original posting of the FCC Registry.
7834	Scituate Police	MA	Plymouth	Scituate	A	PSAP was added since the original posting of the FCC Registry.
7835	Seekonk Police	MA	Bristol	Seekonk	A	PSAP was added since the original posting of the FCC Registry.
3191	Sharon Police Department	MA	Norfolk	Sharon	NC	
3192	Sherborn Police Department	MA	Middlesex	Sherborn	NC	
7836	Shirley Communications	MA	Middlesex	Shirley	A	PSAP was added since the original posting of the FCC Registry.
7837	Shrewsbury Police	MA	Worcester	Shrewsbury	A	PSAP was added since the original posting of the FCC Registry.
3193	Somerset Police Department	MA	Bristol	Somerset	NC	
3194	Somerville Police Department	MA	Middlesex	Somerville	NC	
7838	South Hadley Police	MA	Hampshire	South Hadley	A	PSAP was added since the original posting of the FCC Registry.
8329	South Shore Regional Emergency Communications Center	MA	Plymouth	Hingham	A	PSAP was added since the original posting of the FCC Registry.
7839	Southampton Police	MA	Hampshire	Southampton	A	PSAP was added since the original posting of the FCC Registry.
7840	Southboro Police	MA	Worcester	Southboro	A	PSAP was added since the original posting of the FCC Registry.
7841	Southbridge Police	MA	Worcester	Southbridge	A	PSAP was added since the original posting of the FCC Registry.
7842	Southwick Police	MA	Hampden	Southwick	A	PSAP was added since the original posting of the FCC Registry.
7843	Spencer Police	MA	Worcester	Spencer	A	PSAP was added since the original posting of the FCC Registry.
3195	Springfield Fire Department	MA	Hampden	Springfield	S	PSAP was either a Duplicate or a Secondary PSAP. Calls were handled by PSAP #3196
3196	Springfield Police Department	MA	Hampden	Springfield	NC	
3197	Statewide Emerg Telecom Board-commonwealth Of Mass	MA	Essex	Reading	O	Orphaned PSAP no longer considered a primary call taking answering point. Refrain from using these in future filings.
7844	Sterling Communications	MA	Worcester	Sterling	A	PSAP was added since the original posting of the

						FCC Registry.
7845	Stoneham Police	MA	Middlesex	Stoneham	A	PSAP was added since the original posting of the FCC Registry.
3198	Stoughton Police Department	MA	Norfolk	Stoughton	NC	
7846	Stow Police	MA	Middlesex	Stow	A	PSAP was added since the original posting of the FCC Registry.
7847	Sturbridge Police	MA	Worcester	Sturbridge	A	PSAP was added since the original posting of the FCC Registry.
7848	Sudbury Police	MA	Middlesex	Sudbury	A	PSAP was added since the original posting of the FCC Registry.
7849	Sutton Police	MA	Worcester	Sutton	A	PSAP was added since the original posting of the FCC Registry.
7850	Swampscott Police	MA	Essex	Swampscott	A	PSAP was added since the original posting of the FCC Registry.
3199	Swansea Police Department	MA	Bristol	Swansea	NC	
7851	Taunton Fire	MA	Bristol	Taunton	A	PSAP was added since the original posting of the FCC Registry.
7852	Templeton Police	MA	Worcester	Templeton	A	PSAP was added since the original posting of the FCC Registry.
7853	Tewksbury Police	MA	Middlesex	Tewksbury	A	PSAP was added since the original posting of the FCC Registry.
7854	Topsfield Police	MA	Essex	Topsfield	A	PSAP was added since the original posting of the FCC Registry.
7855	Townsend Police	MA	Middlesex	Townsend	A	PSAP was added since the original posting of the FCC Registry.
7856	Truro Police	MA	Barnstable	Truro	A	PSAP was added since the original posting of the FCC Registry.
7857	Tyngsboro Police	MA	Middlesex	Tyngsboro	A	PSAP was added since the original posting of the FCC Registry.
7858	Upton Police	MA	Worcester	Upton	A	PSAP was added since the original posting of the FCC Registry.
7859	Uxbridge Police	MA	Worcester	Uxbridge	A	PSAP was added since the original posting of the FCC Registry.
7860	Wakefield Police	MA	Middlesex	Wakefield	A	PSAP was added since the original posting of the FCC Registry.
3200	Walpole Police Department	MA	Norfolk	Walpole	NC	
7861	Waltham Communications	MA	Middlesex	Waltham	A	PSAP was added since the original posting of the FCC Registry.

7862	Ware Police	MA	Hampshire	Ware	A	PSAP was added since the original posting of the FCC Registry.
3201	Wareham Police Department	MA	Plymouth	Wareham	NC	
7863	Warren Police	MA	Worcester	Warren	A	PSAP was added since the original posting of the FCC Registry.
7864	Watertown Police	MA	Middlesex	Watertown	A	PSAP was added since the original posting of the FCC Registry.
7865	Wayland Police	MA	Middlesex	Wayland	A	PSAP was added since the original posting of the FCC Registry.
7866	Webster Police	MA	Worcester	Webster	A	PSAP was added since the original posting of the FCC Registry.
7867	Wellesley Police	MA	Norfolk	Wellesley	A	PSAP was added since the original posting of the FCC Registry.
7868	Wellfleet Police	MA	Barnstable	Wellfleet	A	PSAP was added since the original posting of the FCC Registry.
7869	West Boylston Police	MA	Worcester	West Boylston	A	PSAP was added since the original posting of the FCC Registry.
7870	West Bridgewater Police	MA	Plymouth	West Bridgewater	A	PSAP was added since the original posting of the FCC Registry.
7871	West Newbury Police	MA	Essex	West Newbury	A	PSAP was added since the original posting of the FCC Registry.
7872	West Springfield Police	MA	Hampden	West Springfield	A	PSAP was added since the original posting of the FCC Registry.
7873	Westboro Police	MA	Worcester	Westboro	A	PSAP was added since the original posting of the FCC Registry.
8185	Westboro Tc Back-up	MA	Worcester	Westboro	A	PSAP was added since the original posting of the FCC Registry.
7874	Westfield Police	MA	Hampden	Westfield	A	PSAP was added since the original posting of the FCC Registry.
7875	Westford Police	MA	Middlesex	Westford	A	PSAP was added since the original posting of the FCC Registry.
7876	Westminster Police	MA	Worcester	Westminster	A	PSAP was added since the original posting of the FCC Registry.
7877	Weston Police	MA	Middlesex	Weston	A	PSAP was added since the original posting of the FCC Registry.
3202	Westport Police Department	MA	Bristol	Westport	NC	
7878	Westwood Police	MA	Norfolk	Westwood	A	PSAP was added since the original posting of the FCC Registry.
7879	Weymouth Police	MA	Norfolk	Weymouth	A	PSAP was added since the original posting of the FCC Registry.

7880	Wilbraham Police	MA	Hampden	Wilbraham	A	PSAP was added since the original posting of the FCC Registry.
7881	Williamstown Police	MA	Berkshire	Williamstown	A	PSAP was added since the original posting of the FCC Registry.
7882	Wilmington Police	MA	Middlesex	Wilmington	A	PSAP was added since the original posting of the FCC Registry.
7883	Winchendon Police	MA	Worcester	Winchendon	A	PSAP was added since the original posting of the FCC Registry.
7884	Winchester Police	MA	Middlesex	Winchester	A	PSAP was added since the original posting of the FCC Registry.
7885	Winthrop Police	MA	Suffolk	Winthrop	A	PSAP was added since the original posting of the FCC Registry.
7886	Woburn Police	MA	Middlesex	Woburn	A	PSAP was added since the original posting of the FCC Registry.
8186	Worcester Back-up	MA	Worcester	Worcester	A	PSAP was added since the original posting of the FCC Registry.
3203	Worcester Department Of Communications	MA	Worcester	Worcester	NC	
3204	Wrentham Central Dispatch	MA	Norfolk	Wrentham	NC	
7887	Yarmouth Police	MA	Barnstable	West Yarmouth	A	PSAP was added since the original posting of the FCC Registry.

Appendix C -State of New Jersey Emergency Medical Dispatch Guidecards

State of New Jersey
Emergency Medical Dispatch Guidecards

Approved by the
State of New Jersey Department of Health and Senior Services
Office of Emergency Medical Services

Adopted by the
State of New Jersey
Office of Information Technology
Office of Emergency Telecommunications Services
January 2004/Updated April 2006

9-1-1 NEW JERSEY'S EMERGENCY LIFELINE

Traumatic Incident Types

ANIMAL BITES
ASSAULT/DOMESTIC VIOLENCE/ SEXUAL ASSAULT
BLEEDING / LACERATION
BURNS
EYE PROBLEMS / INJURIES
FALL VICTIM
HEAT / COLD EXPOSURE
INDUSTRIAL ACCIDENT
STABBING / GUNSHOT VICTIM / ASSAULT
TRAUMATIC INJURY
VEHICULAR RELATED INJURIES

Medical Chief Complaint Types

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ALLERGIES/STINGS
BACK PAIN
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DIABETIC PROBLEMS
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OD/POISONINGS/INGESTIONS
PSYCHIATRIC / BEHAVIORAL PROBLEMS
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CO POISONING / INHALATION / HAZMAT
CARDIAC ARREST / DOA
- ADULT CPR INSTRUCTIONS
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CHOKING
- ADULT CHOKING INSTRUCTIONS
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Miscellaneous

AEROMEDICAL DISPATCH PROCEDURE
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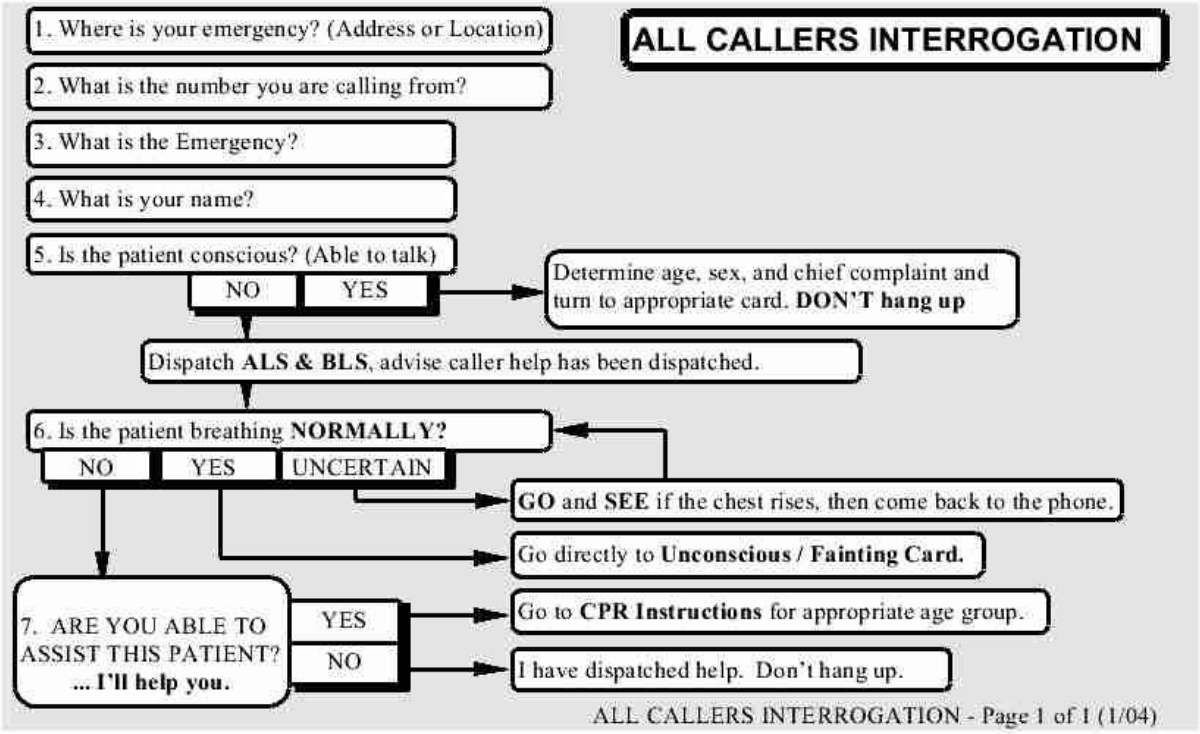


ANIMAL BITES

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is the animal contained?

What type of animal bit the patient?

Is the patient short of breath or does it hurt to breathe?

What part of the body was bitten?

Is the patient bleeding?
IF YES,
From where?
How much?
How long?
Can it be controlled with pressure?

How long ago did they receive the bite?

SIMULTANEOUS ALS/BLS	BLS DISPATCH
DISPATCH	
Unconscious/not breathing normally. Decreased level of consciousness. Uncontrolled bleeding, after attempts to control. Serious neck or face, bites from animal attacks. Bites from known poisonous animals.	Controlled bleeding. Swelling at bite site. Bite below neck, non-poisonous.

ANIMAL BITES — Pre-Arrival Instructions

Contain the animal, if possible.

Keep patient calm and still.

If bleeding, use clean cloth and apply pressure directly over it.
If cloth becomes soaked, do not remove, add to what is already there.

Elevate bleeding extremities.

Use care not to obstruct the airway or breathing.

For snake bites;
- Do not elevate extremity.
- Do not use ice.
- Do not attempt to remove venom.

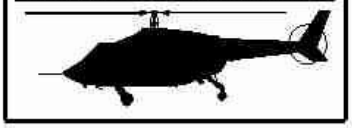
Lock away any pets.

If the patient's condition changes, call me back.

Prompts

If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL
Has law enforcement been notified?
Has Animal Control been notified?

FOLLOW AEROMEDICAL DISPATCH GUIDELINES



Short Report

Age
Sex
Specific location
Chief complaint
Pertinent related symptoms
Medical/Surgical history, if any
Other agencies responding
Any dangers to responding units

ASSAULT/ DOMESTIC, SEXUAL

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is the assailant nearby?

Are you safe?

Was it a physical assault vs. sexual assault?

How was the victim assaulted?
(Stabbing, gunshot or major trauma go to appropriate card)

Where is the patient injured?

Sexual Assault- non-injured, Follow County SART Protocols
Domestic Violence- non-injured, Follow local police protocols

Is the patient bleeding?
IF YES,
- From where?
- How much?
- How long?
- Can it be controlled with pressure?

Can the patient answer your questions?

DISPATCH

SIMULTANEOUS ALS/BLS

Unconscious/not breathing normally.
Decreased level of consciousness.
Crushing injury (except to hands or feet.)
Puncture injury (head, neck, torso, thigh.)
Multiple extremity fractures.
Femur (thigh) fracture.
Uncontrolled bleeding.

BLS DISPATCH

Penetrating/crushing injury to hands or feet.
Isolated extremity fracture.
Minor injuries.
Unknown injuries.
Concerned caller without apparent injuries to victim.
Police request stand-by/check for injuries.

ASSAULT/ DOMESTIC, SEXUAL — Pre-Arrival Instructions

Remain in a safe place, away from the assailant.

Do not remove or touch impaled object.

Have patient lie down and keep calm.

Do not touch weapons.

If bleeding, use clean cloth and apply pressure directly over it. If cloth becomes soaked, do not remove, add to what is already there. Use care not to obstruct the airway or breathing.

Advise patient not to change clothing, bathe or shower.

Keep patient warm.

Gather patient medications, if possible.

Do not allow the patient any food or drink.

Lock away any pets.

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group. Has law enforcement been notified?	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

BLEEDING / LACERATION

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?

Is patient breathing normally?

Where is the bleeding from?
If vaginal, is she pregnant?

Is blood squirting out?

Is the patient a hemophiliac (a bleeder)?

IF INJURY
From where?
How much?
How long?
Can it be controlled with pressure?

Can the patient answer your questions?

DISPATCH

SIMULTANEOUS ALS/BLS	BLS DISPATCH
Unconscious/not breathing normally. Decreased level of consciousness. Any arterial bleeding. Hemophilia. Rectal bleeding with significant blood loss. Vomiting blood or coffee ground material. Bleeding from mouth with difficulty breathing. Bleeding from the neck, groin, or armpit with significant blood loss. Vaginal bleeding if over 20 weeks pregnant, associated with lower abdominal pain or fainting.	Minor bleeding from any other area

BLEEDING / LACERATION Pre-Arrival Instructions

If bleeding, use clean cloth and apply pressure directly over wound. Do not remove. If cloth becomes soaked, add more to what is already there.

If nosebleed, tell the patient to apply direct pressure by pinching the nose tightly between their index finger and thumb, sit forward and hold it until help arrives. Attempt to spit out blood, swallowing may make patient nauseous.

Advise patient not to move.

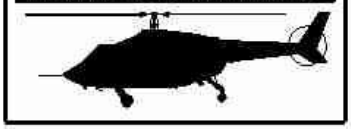
Cover patient with blanket and try to keep them calm.

Nothing to eat or drink.

Gather patient medications, if possible.

Locate any amputated part and place in clean plastic bag, not ice. If teeth, place them in milk.

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group **FOLLOW AEROMEDICAL DISPATCH GUIDELINES** 	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

BURNS

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

How was the patient burned?

THERMAL Is anything on the patient still burning?
Stop the burning. (Go to pre-arrival instructions).

ELECTRICAL Is the patient still in contact with the electric source?
How was patient electrocuted?
If household, was it the stove, clothes dryer or other 220 volt source?

CHEMICAL What chemical caused the burn?
Can the patient answer your questions?

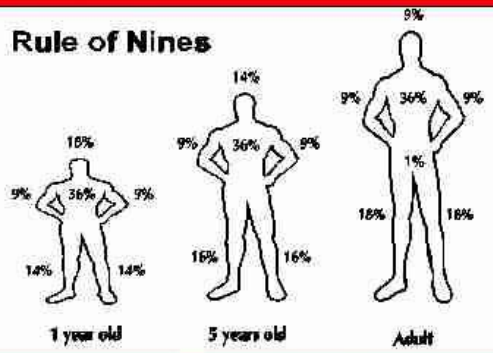
Is the patient short of breath or does it hurt to breathe?
Is the patient having difficulty swallowing?
Where is the patient burned?
IF HEAD OR FACE:
Are they coughing?
Are their nose hairs burned?
Are there burns around their mouth and nose?
If male, is any facial hair burned?
Are there any other injuries?

DISPATCH

SIMULTANEOUS ALS/BLS	BLS DISPATCH
Unconscious/not breathing normally. Decreased level of consciousness. Burns to airway, nose, mouth. Hoarseness, difficulty talking or swallowing. Burns over 20% of body surface. Electrical Burns/electrocution from 220 volts or greater power lines/panel boxes. 2nd & 3rd degree burns (partial or full thickness) to Palms (hands) Soles (feet) Groin	Less than 20% body surface burned. Spilled hot liquids. Chemical burns to eyes. Small burn from match, cigarette. Household electric shock. Battery explosion. Freezer burns.

BURNS Pre-Arrival Instructions

Turn power off, (if safe).
Have patient remove contaminated clothing, if possible.
If chemical, get information on chemical (MSDS Sheet if available).
If chemical is powder, brush off, no water.
Flush chemical burns from eyes. Remove contact lenses if present.
Place burned area in cool water (not ice), if convenient.
Gather patient medications, if possible.
If the patient's condition changes, call me back.



Prompts

If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL
If unconscious, NOT breathing normally, go to CPR for appropriate age group.
Dispatch Fire Department, according to local protocol.

Short Report

Age
Sex
Specific location
Chief complaint
Pertinent related symptoms
Medical/Surgical history, if any
Other agencies responding
Any dangers to responding units

EYE PROBLEMS / INJURIES

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?

Is patient breathing normally?

What caused the injury?
- Chemicals
- Foreign object
- Impaled object
- Direct blow
- Flying object
- Welding/near welder

Is eyeball cut open or leaking fluid?

Are there any other injuries?

DISPATCH

SIMULTANEOUS ALS/BLS	BLS DISPATCH
Unconscious/not breathing normally. Decreased level of consciousness.	Any eye injury

EYE PROBLEMS / INJURIES — Pre-Arrival Instructions

Do not remove any penetrating objects.

If eyeball is cut or injured, do not touch, irrigate, or bandage.

If a chemical injury, flush immediately with water.

Continue until help arrives. Remove contact lenses.

Advise patient not to move.

Have patient SIT down.

Cover patient with blanket and try to keep them calm.

Nothing to eat or drink

Gather patient medications, if possible.

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL 	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

FALL VICTIM

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient breathing normally?

Is patient alert?

How far did the patient fall?

What kind of surface did the patient land on?

Are there any obvious injuries? What are they?

Did the patient complain of any pain or illness just prior to the fall?

Is the patient able to move their fingers and toes? (Do not have them move any other body part).

Is the patient bleeding?
IF YES,
From where?
How much?
How long?

SIMULTANEOUS ALS/BLS	BLS DISPATCH
DISPATCH	
Unconscious/not breathing normally. Decreased level of consciousness. Falls greater than 10 feet. Falls associated with or preceded by, pain, discomfort in chest, dizziness, headache, or diabetes. Patient paralyzed. Uncontrolled bleeding. Multiple extremity fractures Femur (thigh) fracture.	Unconscious, but now conscious without critical symptoms. Falls less than 10 feet. Neck or back pain without critical symptoms. Controlled bleeding. Cuts, bumps, or bruises. Patient assist. Involved in accident, no complaints. Isolated extremity fracture.

FALL VICTIM Pre-Arrival Instructions

Turn off any machinery.

Do not move the patient if there are no hazards.

Advise patient not to move.

Cover patient with blanket and try to keep them calm.

No food or drink.

If bleeding, use clean cloth and apply pressure directly over it. If cloth becomes soaked, do not remove, add to what is already there. Use care not to obstruct the airway or breathing.

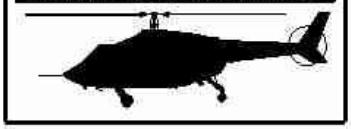
Gather patient medications, if possible.

If the patient's condition changes, call me back.

Prompts

Is Rescue needed?
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL
If unconscious, NOT breathing normally, go to CPR for appropriate age group.

FOLLOW AEROMEDICAL DISPATCH GUIDELINES



Short Report

Age
Sex
Specific location
Chief complaint
Pertinent related symptoms
Medical/Surgical history, if any
Other agencies responding
Any dangers to responding units

HEAT / COLD EXPOSURE

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?
Is patient breathing normally?
What happened?
What was the source of the heat or cold?
What was the length of exposure?
Does the patient have any complaints?
Is the patient complaining of pain? If so where?
Can the patient talk in full sentences?
Does the patient respond to you and follow simple commands?
Can the patient answer your questions?
Is the patient acting normal for him or her? If not, what is different?
Is the patient sweating profusely?
How does the patient act when he/she sits up?
Is the patient dizzy, weak, or feeling faint?

DISPATCH

SIMULTANEOUS ALS/BLS	BLS DISPATCH
Unconscious/not breathing normally. Decreased level of consciousness. Confused/disoriented. Fainting (Syncope). Cold Water Submersion	Patient with uncontrollable shivering. Heat Exhaustion with no critical symptoms

HEAT / COLD EXPOSURE — Pre-Arrival Instructions

Remove from hot/cold environment as necessary.

If patient is cold and dry, cover patient.

If patient is cold and wet, remove clothing and cover patient

If patient is over-heated, loosen clothing to assist cooling.

Nothing by mouth if there is a decrease of consciousness.

Do not rub frostbitten extremities.

Gather patient medications, if possible.

If the patient's condition changes, call me back .

Prompts

If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL

If unconscious, NOT breathing normally, go to CPR for appropriate age group.

Short Report

Age
Sex
Specific location
Chief complaint
Pertinent related symptoms
Medical/Surgical history, if any
Other agencies responding
Any dangers to responding units

INDUSTRIAL ACCIDENTS

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?

Is patient breathing normally?

Are there any obvious injuries? What are they?

What part of the body has been amputated?

Do you have the amputated parts?

Is the patient able to move their fingers and toes?
(Do not have them move any other parts of their body).

Is the patient bleeding?

IF YES,
From where?
How much?
How long?
Can it be controlled with pressure?

Is the patient entrapped?

DISPATCH

SIMULTANEOUS ALS/BLS

Unconscious/not breathing normally.
Decreased level of consciousness.
Accident with crushing or penetrating injury to; head, neck, torso, thigh.
Patient entrapped. PROMPT (Dispatch Rescue Unit)
Amputation other than finger/toes.
Patient paralyzed.
Uncontrolled bleeding.
Multiple extremity fractures
Femur (thigh) fracture.

BLS DISPATCH

Unconscious, but now conscious without critical symptoms.
Amputation/entrapment of fingers/toes.
Neck or back pain without critical symptoms.
Controlled bleeding.
Cuts, bumps, or bruises.
Patient assist.
Involved in accident, no complaints.

INDUSTRIAL ACCIDENTS Pre-Arrival Instructions

If machinery involved, turn it off (attempt to locate maintenance person).

Do not move patient if there are no hazards.

Advise patient not to move.

Do not enter a confined space to tend to the patient.

Have someone meet the ambulance to guide them to the patient.

Cover patient with blanket and try to keep them calm.

Nothing to eat or drink.

If bleeding, use clean cloth and apply pressure directly over wound. Do not remove. If cloth becomes soaked, add more to what is already there.

Locate any amputated parts and place in clean plastic bag, not on ice. If teeth, place them in milk.

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group. Is Rescue needed? Is Fire Department needed? Is Aeromedical Evacuation needed?	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

FOLLOW AEROMEDICAL DISPATCH GUIDELINES

STABBING/GUNSHOT/ASSAULT

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

When did this happen?
If recent, is assailant still present?

Is there a weapon present?

Is patient alert?

Is patient breathing normally?

Is there more than one person injured?

Is there more than one wound?

What part(s) of the body is injured?

Is there bleeding?
IF YES,
From where?
How much?
How long?
Can it be controlled with pressure?

SIMULTANEOUS ALS/BLS	BLS DISPATCH
DISPATCH Unconscious/not breathing normally. Decreased level of consciousness. Uncontrolled Bleeding Leg injury above the knee. Wounds to head neck, torso, or thigh. Multiple Casualty Incident.	Wounds to the arms or on the leg below the knee.

STABBING/GUNSHOT/ASSAULT Pre-Arrival Instructions

Tell caller to remain safe (beware of assailant).

Do not disturb the scene or move weapons.

Do not pull out any penetrating weapons.

If bleeding, use clean cloth and apply pressure directly over wound. Do not remove.

If cloth becomes soaked, add more to what is already there.

Have the patient lie down and remain calm.

Keep the patient warm.

If the patient's condition changes, call me back.

Prompts

If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL

If unconscious, NOT breathing normally, go to CPR for appropriate age group.

Has law enforcement been notified?

Advise responders when scene is secure.

FOLLOW AEROMEDICAL DISPATCH GUIDELINES

Short Report

Age
Sex
Specific location
Chief complaint
Pertinent related symptoms
Medical/Surgical history, if any
Other agencies responding
Any dangers to responding units

TRAUMATIC INJURY

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?

Is patient breathing normally?
(Consider breathing card)

How was the patient injured?

Where is the patient injured?

Describe what happened.

Is the patient bleeding?
IF YES,
From where?
How much?
How long?
Can it be controlled with pressure?

DISPATCH

SIMULTANEOUS ALS/BLS

Unconscious/not breathing normally.
Decreased level of consciousness.
Penetrating/crushing injury to head, neck, torso, thigh.
Multiple extremity fractures
Leg injury above the knee.
Uncontrolled bleeding.

BLS DISPATCH

Penetrating/crushing injury to hands or feet.
Unknown or internal injuries.
Minor injuries
Concerned caller without apparent injuries to victim.
Isolated extremity fracture.
Police request stand-by/check for injuries.

TRAUMATIC INJURY Pre-Arrival Instructions

Do not move patient, unless there are hazards.

Do not remove or touch impaled object.

If bleeding, use clean cloth and apply pressure directly over it.

If cloth becomes soaked, do not remove, add to what is already there.

Use care not to obstruct the airway or breathing.

Keep patient warm.

Do not disturb anything.

Gather patient medications, if possible.

Locate any amputated parts and place in clean plastic bag, not on ice. If teeth, place in milk.

If the patient's condition changes, call me back.

Prompts

If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL

If unconscious, NOT breathing normally, go to CPR for appropriate age group.

Is law enforcement needed?

FOLLOW AEROMEDICAL DISPATCH GUIDELINES

Short Report

Age
Sex
Specific location
Chief complaint
Pertinent related symptoms
Medical/Surgical history, if any
Other agencies responding
Any dangers to responding units

VEHICULAR RELATED INJURIES

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Are there any hazards present? (Is the scene safe).
- Fire
- Water
- HazMat
- Wires down

Is patient alert?
Is patient breathing normally? (Consider breathing card).
Did you stop or drive by?
How many patients are injured?

Can the patient(s) describe where their pain is located?

What type of vehicle(s) are involved?

Describe what happened?

Are all of the patients free of the vehicle?

Is anyone trapped in the vehicle?

Was anyone thrown from the vehicle?

DISPATCH

SIMULTANEOUS ALS/BLS

Unconscious/not breathing normally.
Decreased level of consciousness.
Chest pain prior to accident.
Reported injuries with following mechanisms:
- Vehicle (car/motorcycle) vs. immovable objects.
- Vehicles involved in head-on or T-bone collision.
- Car vs. pedestrian, motorcycle or bicycle.
- Patient(s) trapped or ejected.
- Vehicle roll over.

Critical criteria – injuries to head, neck, torso, thigh.
Multiple Casualty Incident

BLS DISPATCH

Accident with injury, no critical criteria.
Police request stand-by/check for injuries.

VEHICULAR RELATED INJURIES — Pre-Arrival Instructions

Do not move patient unless there are hazards.

If bleeding, use clean cloth and apply pressure directly over wound.

Do not remove cloth. If cloth becomes soaked , add more to what is already there.

Gather patient medications, if possible.

If the patient's condition changes, call me back.

Prompts

If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL
If unconscious, NOT breathing normally, go to CPR for appropriate age group
Has law enforcement been notified?
Is Rescue needed?
Is the Fire Department needed?

FOLLOW AEROMEDICAL DISPATCH GUIDELINES

Short Report

Age
Sex
Specific location
Chief complaint
Pertinent related symptoms
Medical/Surgical history, if any
Other agencies responding
Any dangers to responding units

ABDOMINAL PAIN

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?
Is patient breathing normally? (Consider breathing card)
Is the pain due to an injury to the patient?
Has the patient vomited? If yes, What does the vomit look like?
Are the patient's bowel movements different than normal?
If yes, How would you describe them?
Is the pain above the belly button?

If the patient is a woman between 12-50 years, ask Could she be pregnant?
Has she said she felt dizzy?
Has there been vaginal bleeding? If yes, how much?
How does the patient act when he/she sits up?
Does the patient have any other medical or surgical history?
Is the patient wearing a Medic Alert tag? If yes, what does it say?

DISPATCH

SIMULTANEOUS ALS/BLS	BLS DISPATCH
Unconscious/not breathing normally. Decreased level of consciousness. Vomiting blood (red/dark red) or coffee ground-like substance. Black tarry stool.(Caution: Could be a resultant from diet supplements) Lower abdominal pain, woman 12-50 years (if associated with dizziness or fainting or heavy vaginal bleeding). Upper abdominal pain with prior history of heart problem. Abdominal pain with fainting or near fainting, patient over 50 yrs. Fainting/near fainting when sitting. (hypotension)	Pain with vomiting. Flank pain (Kidney stone). Abdominal (non-traumatic). Pain unspecified.

ABDOMINAL PAIN — Pre-Arrival Instructions

Nothing to eat or drink.

Gather patient medications, if any.

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/ BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group.	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

ALLERGIES / STINGS

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?
Is patient breathing normally? (Consider breathing card)
What is the patient complaining of?
Is the patient having difficulty swallowing?
How does the patient act when they sit up?
Does the patient have a rash or hives?
Is the patient complaining of itching?

Does the patient have a history of a reaction to anything?
IF YES:
Describe the reaction the patient had before.
How long ago was the patient exposed?

Are the symptoms getting worse?

Is the patient wearing a Medic Alert tag?
If yes, what does it say?

DISPATCH

SIMULTANEOUS ALS/BLS	BLS DISPATCH
Unconscious/not breathing normally. Decreased level of consciousness. Difficulty breathing. Difficulty swallowing. Cannot talk in full sentences. Swelling in throat or on face. Fainting. History of severe reaction. Itching or hives in multiple areas.	Call delayed longer than 30 minutes with history of reaction. Concern about reaction, but no history. Reaction present for long time (hours), no difficulty breathing. Itching or hives in one area.

ALLERGIES / STINGS — Pre-Arrival Instructions

Have the patient rest in the most comfortable position.

Keep neck straight – remove pillows.

Watch patient for signs of difficulty breathing (slow breathing), or cardiac arrest.

Keep calm.

Brush the stinger off, if possible. Do not attempt to grasp stinger.

Ice to sting.

Gather patient medications, if any.

Do you have a Epi-Pen or reaction kit? Yes or No
If yes, have you used it as the physician has directed?

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group.	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

BACK PAIN

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?

Is patient breathing normally? (Consider breathing card)

Is the pain due to an injury to the patient?

Has the patient felt dizzy or fainted?

Does the patient have any other medical or surgical history?

Is the patient wearing a Medic Alert tag? If yes, what does it say?

DISPATCH

SIMULTANEOUS ALS/BLS	BLS DISPATCH
Unconscious/not breathing normally. Decreased level of consciousness. Non-traumatic back pain with prior history of heart problem. Back pain with fainting or near fainting, patient over 50 yrs.	Flank pain/back (Kidney stone). Back pain (non-traumatic). Back pain unspecified. Chronic back pain.

BACK PAIN Pre-Arrival Instructions

If the pain is due to an injury, tell the patient not to move unless hazards are present.

Nothing to eat or drink.

Have the patient rest in the most comfortable position.

Gather patient medications, if any.

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

BREATHING PROBLEMS

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?
Is patient breathing normally?
How long has this been going on?
What has changed in their breathing to prompt you to call?
Is the patient able to speak in full sentences?
Does the patient have to sit up to breathe?
Is the patient experiencing any other problems right now?
Has the patient ever had this problem before?
What was the patient doing just prior to when he/she became short of breath?

If sudden onset:
Has the patient been hospitalized recently for childbirth or a broken leg?
If female, does the patient take birth control pills?
Could the patient be having an allergic reaction?
Is the patient drooling of having a hard time swallowing?
Are they on asthma medication, or ever used them?
Does the patient have any other medical or surgical history?
Is the patient on oxygen?

DISPATCH

SIMULTANEOUS ALS/BLS	BLS DISPATCH
Unconscious. Decreased level of consciousness. Any patient complaining of breathing or respiratory difficulty, examples of symptoms may include: Difficulty breathing with chest pain. Unable to speak in full sentences. History of Asthma or respiratory problems. Inhaled substance. Recent childbirth/broken leg/hospitalization (within 2-3 months). Drooling/difficulty swallowing. Tingling or numbness in extremities/around mouth, 35 or older.	Cold symptons. Stuffed nose. Oxygen bottle empty. Patient assist. Long term, no change.

BREATHING PROBLEMS — Pre-Arrival Instructions

Keep patient calm.

Patient may be more comfortable sitting up.

Tell patient not to exert him/herself.

Gather patient medications, if possible.

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group.	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

CHEST PAIN/HEART PROBLEMS

State of New Jersey EMD Guidecards Version 4/06

KEY QUESTIONS

Is patient alert?
Is patient breathing normally? (Consider breathing card)
Where in the chest is the pain located?
Does the patient feel pain anywhere else? If so, where?
How long has the pain been present?
Does the pain change when the person breathes or moves?
Does the patient take nitroglycerin? Have they taken it?
Has the patient ever had heart surgery or a previous heart attack?
Has the patient ever had a heart problem?
Is the patient nauseated or vomiting?
Is the patient sweating profusely?
Is the patient experiencing rapid heart rate with chest pain?
Does the patient have a history of rapid heart rate?
How does the patient act when he/she sits up?
Is the patient weak, dizzy, or faint?

	SIMULTANEOUS ALS/BLS	BLS DISPATCH
DISPATCH	Unconscious/not breathing normally. Decreased level of consciousness. Patient complaining of chest pain with any of the critical symptons: Short of breath. Nausea. Diaphoretic. Rapid heart rate Syncope With cocaine/crack (drug) use.	Patients under 35, without critical symptoms

CHEST PAIN/HEART PROBLEMS — Pre-Arrival Instructions

Have the patient sit or lie down, whichever is more comfortable.

Keep patient calm.

Loosen any tight clothing.

Does the patient have nitroglycerin?
If yes: Has the patient taken one?
if not taken, take as the physician has directed (patient should be seated).

Can the patient take asprin?
If yes: then ask-Have they had any bleeding from mouth or rectum?
If no bleeding, advise caller to assist patient to take 1 adult asprin.

Gather patient medications, if any.

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group.	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units Advise of any Hospitals with Special Services Diversion

DIABETIC PROBLEMS

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?
Is patient breathing normally?
(Consider breathing card)
Do they know who they are and where they are?
Is the patient acting in their normal manner. If not, what is different?
Is the patient complaining of any pain? Where is it located?
How does the patient act when he/she sits up?
Are they dizzy, weak, or feeling faint?
Is the patient sweating profusely?
Has the patient had a seizure?
Is the patient on insulin? If so, when did they take their medication?
When did the patient last eat?

	SIMULTANEOUS ALS/BLS	BLS DISPATCH
DISPATCH	Unconscious/not breathing normally. Decreased level of consciousness. Unusual behavior/acting strange. Profuse sweating. Seizure.	Awake/alert Not feeling well.

DIABETIC PROBLEMS Pre-Arrival Instructions

Nothing by mouth if the patient is unable to take it by himself/herself

If the patient can take it by himself/herself, give juice with 2 to 3 teaspoons of sugar in it.

Allow patient to find a comfortable position.

Gather patient medications, if any.

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group.	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

HEADACHE

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?
Is patient breathing normally? (Consider breathing card)
How is the patient acting? If unusual, what is different about them?
Does the patient know where they are and who they are?
Is the headache different than headaches the patient has had in the past?
Did the headache come on suddenly or gradually?
What was the patient doing when the headache started?
Does the patient have pain anywhere else? If so, where?
Has the patient had a recent illness or injury? If so, what?
Does the patient have a headache history?
Is the patient wearing a Medic Alert Tag? If so, what does is say?

DISPATCH	SIMULTANEOUS ALS/BLS	BLS DISPATCH
	Headache with these critical symptons: Decreased level of consciousness. Mental status change. Worst headache ever. Sudden onset. Visual disturbance, with no history of migraines.	Headache without critical symptoms.

HEADACHE Pre-Arrival Instructions

Nothing by mouth.

Allow the patient to find position of comfort.

Gather patients medications, if any.

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group.	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

OD/POISONINGS/INGESTION

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?
Is patient breathing normally? (Consider breathing card)
Do you have any idea what the patient took?
Is the patient acting normally for him or her? If not, what is different?
If the patient took medications, were they prescription medications?
What medication did they take? How much?
If it was not medication, what type of substance did the patient take?
Is the patient having difficulty swallowing?
How old is the patient?

Has the patient used street or non-prescription drugs?
If yes, with alcohol?
If cocaine or crack, is the patient complaining of any pain?
(If chest pain go to chest pain card)
Where?
Is the patient violent? Do they have access to a weapon?
Has the patient vomited?
If yes, describe.

DISPATCH

SIMULTANEOUS ALS/BLS	BLS DISPATCH
OD/Poisoning/Ingestions with these critical symptons. Unconscious/not breathing normally. Any overdose of medication with altered level of consciousness. Cocaine/crack with chest pain. Ingestion of household cleaners, antifreeze, solvents, methanol, cyanide, insecticides. Difficulty swallowing. Alcohol intoxication, patient can not be aroused. Combined alcohol and drug overdose.	Drugs without critical symptons. Intentional/accidental, with medications. 3rd party report, caller not with patient. Reported OD, patient denies taking medications or unknown if medications/substance taken. Known alcohol intoxication without other drugs, can be aroused.

OD/POISONINGS/INGESTIONS Pre-Arrival Instructions

Keep patient in area/house, if safe.

Get container of substance taken if at the scene.

Don't force coffee or place patient in shower.

Nothing by mouth, including Ipecac, unless advised by poison control.

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group. **Consider Poison Control Center (1-800-222-1222, or one button transfer)** Is law enforcement needed?	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

PSYCHIATRIC/BEHAVIORAL PROBLEMS

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?
Is patient breathing normally?
(Consider breathing card)
What happened?
Has the patient harmed himself?
IF YES: (Consider trumatic injury card)
With what?
Where are the injuries?
Is the patient acting in their normal manner?
If not, what is different or unusual?
Where is the patient now?
Do you think the patient might harm himself?
If so, with what?

Can the patient talk to you?
Can the patient answer your questions?
Has the patient taken any drugs or alcohol?
(Consider OD/POISIONING card)
Does the patient have a weapon or access to a weapon?
Is patient a diabetic? (Consider diabetic card)
Is the scene secure?

DISPATCH

SIMULTANEOUS ALS/BLS	BLS DISPATCH
Decreased level of consciousness	Lacerated wrist(s) with controlled bleeding. Unusual behavior with a psychiatric history. Known alcohol intoxication without other drugs (can be aroused). Threats against self or others. Police request for stand-by. Patient out of psychiatric medications

PSYCHIARTIC / BEHAVIORAL PROBLEMS — Pre-Arrival Instructions

Keep the patient in area, if safe.

Keep patient calm, if possible.

If you feel you are in danger, leave the scene.

Gather patient medications, if any.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group. Consider Crisis Center. Is law enforcement needed?	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

SEIZURES / CONVULSIONS

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?
Is patient breathing normally?
Describe what the patient is doing.
Is the patient still seizing?
How long has the patient been seizing?
Has the patient had a seizure before?
Does the patient have a medic alert bracelet on?
    If yes, what does it say?

Is the patient a diabetic? (Consider diabetic card).

If child:
    Has the child been sick?
    Does the child have a fever or feel hot?
If female:
    Is the woman pregnant?
Is the patient a recreational drug user?
Has the patient had a recent head injury?
    If yes, before or after the seizure?
    Within the last three days?

DISPATCH — SIMULTANEOUS ALS/BLS	BLS DISPATCH
Unconscious/not breathing normally. Decreased level of consciousness. Not breathing after seizure stops. Extended seizures greater than 5 minutes. Multiple seizures. Febrile seizures. First time seizure or seizure, unknown history. Diabetic. Pregnant. Secondary to drug overdose. Secondary to recent head injury. Any seizure that is different than normal	Single seizure with history of seizure disorder

SEIZURES / CONVULSIONS — Pre-Arrival Instructions

Clear area around the patient.

Do not restrain patient.

Do not place anything in patient's mouth.

After seizure has stopped, check to see if patient is breathing.
If not, Determine appropriate age group.
Go to CARDIAC/RESPIRATORY ARREST instructions for appropriate age group

Have patient lie on side.

If patient is a child, remove clothing to cool patient if hot and feverish.

Gather patient medications, if any.

If the patient's condition changes, call me back.

Prompts	Short Report
Any seizure with an unknown medical history is assumed to be a first time seizure. If unconscious after seizure, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

SICK PERSON

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?
Is patient breathing normally?
Can I talk to the patient?
Yes: What is the problem?
Are you short of breath or is it hard to breath?
Are you feeling pain anywhere? If so where?
(Consider appropriate card. Back, chest, abdomen)
Do you feel light headed or dizzy?

No: Describe what the patient is doing.
How does the patient look?
What is the patient complaining of?
Does the patient respond to you and follow simple commands?

Does the patient answer your questions?

Is the patient acting normally for him or her?
If not, what is different?

Is the patient complaining of pain? Where?

How does the patient feel when he/she sits up?
Have you checked for a medic alert tag?
If there is an alert tag, what does it say?
Is there insulin in the refrigerator?
Was the onset sudden or gradual?

DISPATCH

SIMULTANEOUS ALS/BLS	BLS DISPATCH
Decreased level of consciousness. Multiple fainting episodes	Generalized weakness. Medic alert from alarm company. Flu symptoms. High blood pressure without critical symptoms. High temperature. Patient assist. Other.

SICK PERSON Pre-Arrival Instructions

Gather patient medications, if possible.

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to **UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL** If unconscious, **NOT** breathing normally, go to **CPR** for appropriate age group. If a specific chief complaint is identified the EMD should use the guidecard that suits the patient's chief complaint.	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

STROKE / CVA

State of New Jersey EMD Guidecards Version 4/06

KEY QUESTIONS

Is patient alert?
Is patient breathing normally? (Consider breathing card)
Describe what the patient looks like.
What is the patient doing?
Can the patient respond to you and follow simple commands?
Can the patient answer your questions?
How is the patient acting?
If acting unusually, what is different?
Is the patient able to speak in full sentences?

Is the patient complaining of any pain? Where is the pain located?
(Consider appropriate card. Back, chest, abdomen)
Has the patient had a headache?
(Consider headache card)
Has the patient had any recent injury/trauma?
Does the patient have any other medical or surgical history?
What?
Has the patient had a stroke before?
Does the patients speech sound normal?

DISPATCH

SIMULTANEOUS ALS/BLS	BLS DISPATCH
Unconscious/not breathing normally. Marked change in level of consciousness. New onset of one sided weakness with paralysis, facial droop, slurred speech.	Past history of stroke (CVA) with no new changes

STROKE / CVA Pre-Arrival Instructions

Keep patient calm.

Don't allow patient to move around.

If unconscious or having difficulty breathing, keep neck straight and remove pillows.

Nothing by mouth (to eat or drink).

Gather patient medication, if any.

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group.	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units Advise of any Hospitals with Special Services Diversion.

UNKNOWN / MAN DOWN

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?

Is patient breathing normally? (Consider breathing card)

Why is the patient down?
If determined, go to appropriate card.

Is patient able to talk?

What was patient doing?
Is patient able to move at all?

Where exactly is the patient?

DISPATCH	SIMULTANEOUS ALS/BLS	BLS DISPATCH
	Unconscious/not breathing normally. Decreased level of consciousness. Multiple Casualty Incident Criteria.	Unknown (Third Party Call) without indications of unconsciousness. Patient talking, moving, sitting, or standing

UNKNOWN / MAN DOWN — Pre-Arrival Instructions

If there is no danger, go to patient to see if patient is awake, breathing normally, or moving at all.

Return to the phone and let me know

Watch for the emergency unit and direct them to the patient.

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

CO / INHALATION / HAZMAT

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?

Is patient breathing normally? (Consider breathing card)

What is the source of the contamination?

Has the patient been removed from the area or source of contamination?

Is a CO Detector activated?

What is the name of the contaminating agent?

DISPATCH — SIMULTANEOUS ALS/BLS	DISPATCH — BLS DISPATCH
Critical Symptoms: Unconscious/LOC/not breathing normally. Decreased level of consciousness. Ingestion / inhalation household cleaners, antifreeze, solvents, methanol, cyanide, or insecticides. Difficulty swallowing/breathing. Multiple Casualty Incident.	Chemicals on patient's skin or clothing, no critical symptoms. Third party report, caller not with patient

CO / INHALATION / HAZMAT Pre-Arrival Instructions

Prevent self contamination.

Have patient remove contaminated clothing, if possible.

Remove contact lenses, if possible.

If chemical, get information on chemical (MSDS Sheet if available).

If chemical is powder, brush off, no water.

Flush chemicals from burns to eyes, remove contacts

Place burned area in cool water (not ice), if convenient.

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL Ask for information from MSDS CO Detector, Get everyone out of the house Consider Poison Control Center (1-800-222-1222, or one button transfer) Dispatch Fire Department Is HazMat team needed?	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

CARDIAC ARREST / DOA

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?

Is patient breathing normally? (Consider breathing card)

If unsure about consciousness, interrogate further:
a. Does the patient respond to you?
Talk to you? Answer questions? Hear you?
b. Does the patient move?
Flinch? Move arms or legs?
c. Are the pupils fixed and dilated?

If unsure about breathing, interrogate further:
a. Have the caller go and see if the chest rises, then come back to the phone.
b. Listen for the sound, frequency and description of breaths.

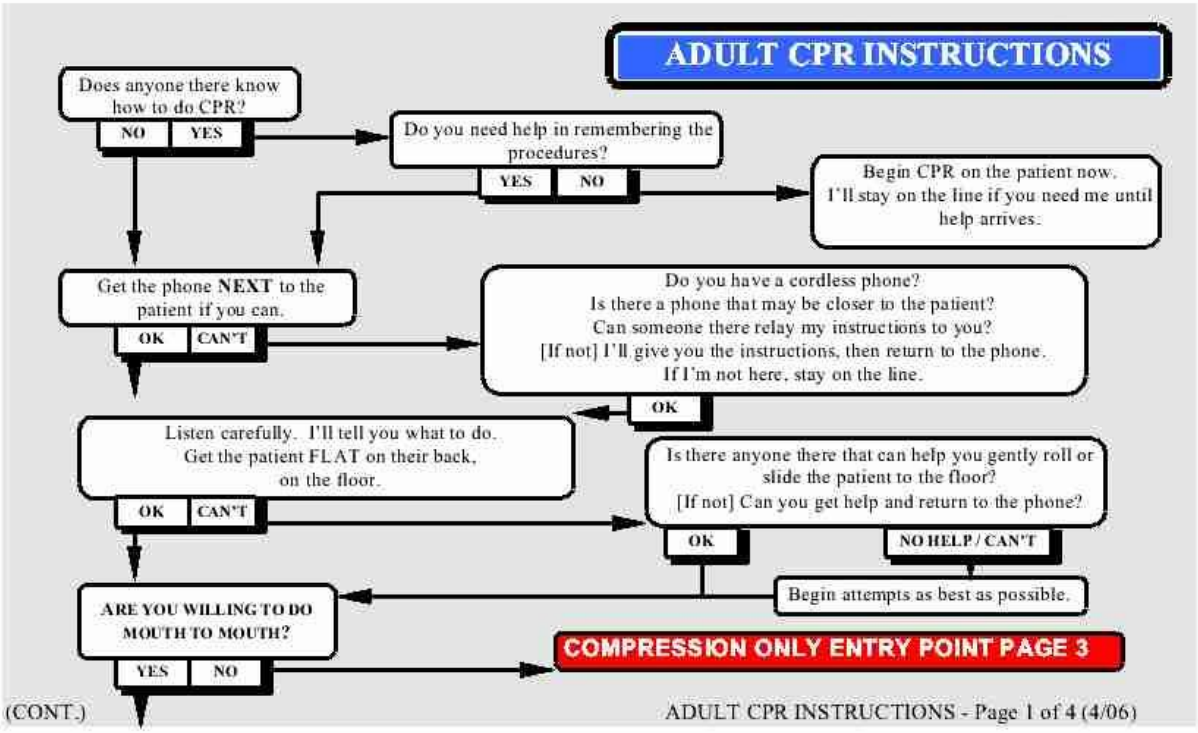
Agonal respirations are often reported as:
gasping, snoring, or gurgling
barely breathing
moaning weak or heavy
occasional

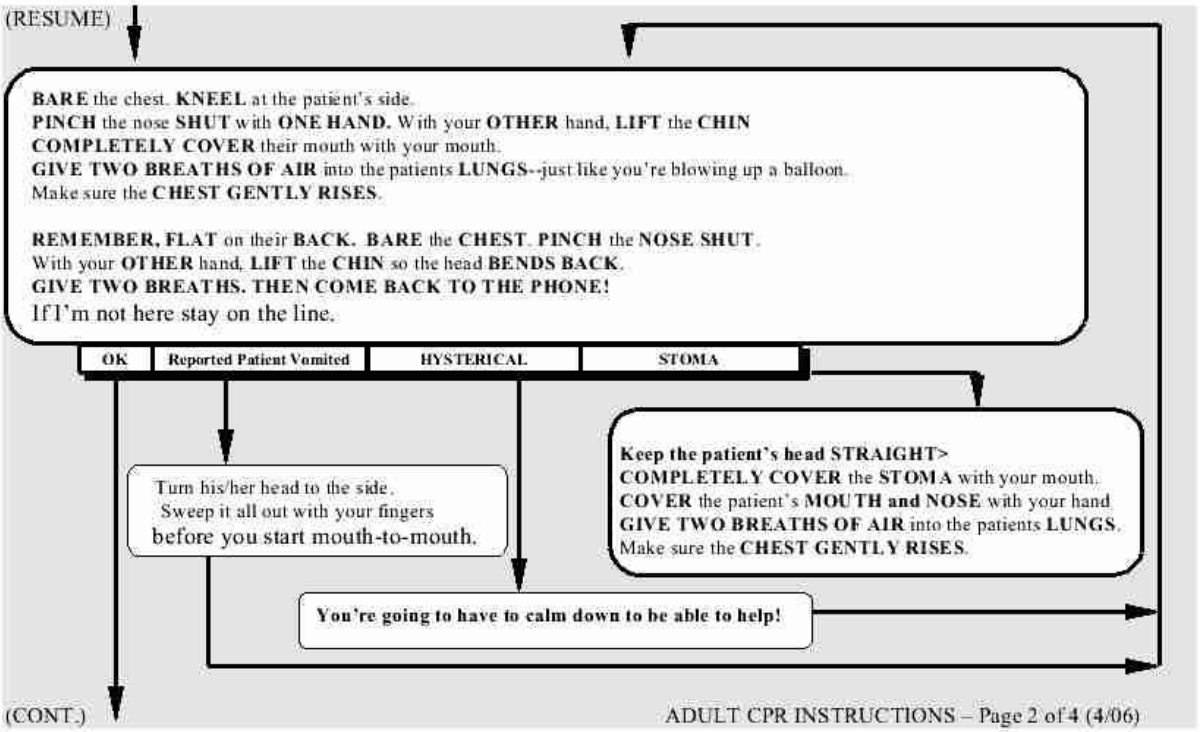
SIMULTANEOUS ALS/BLS	BLS DISPATCH
DISPATCH Unconscious/not breathing adequately or at all. Possible DOA's, of unknown origin	**FOLLOW LOCAL PROTOCOL** CONFIRMED HOSPICE EXPECTED DEATH

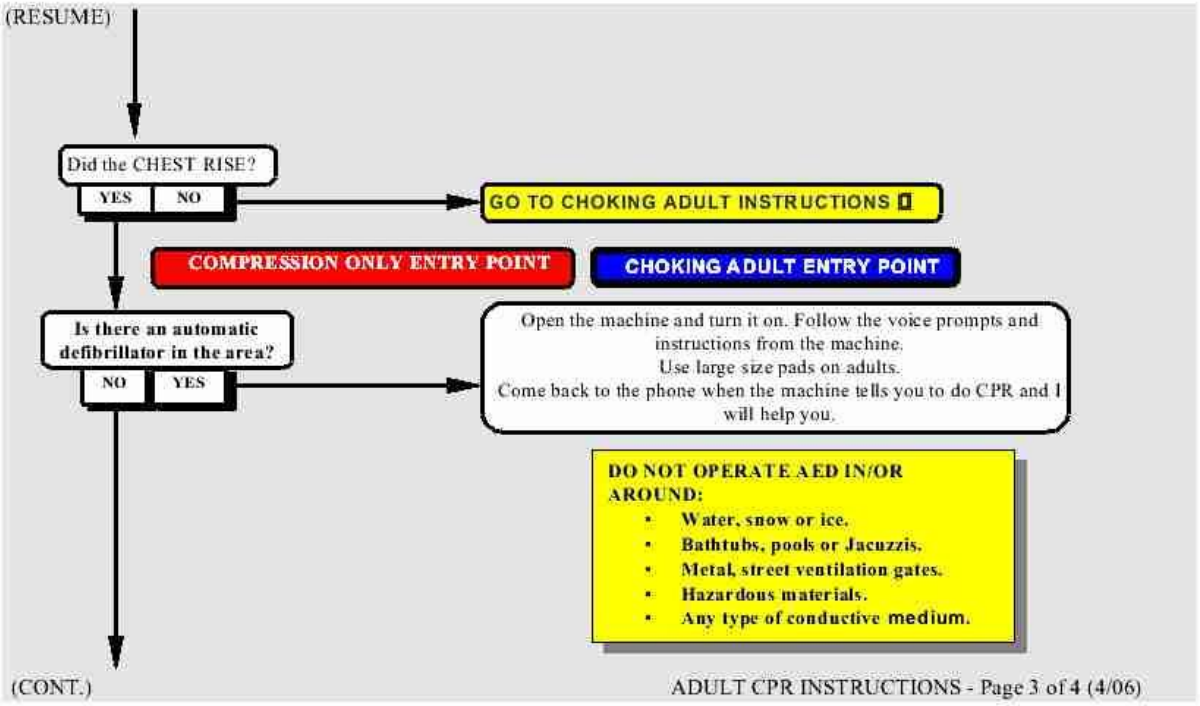
CARDIAC ARREST / DOA Pre-Arrival Instructions

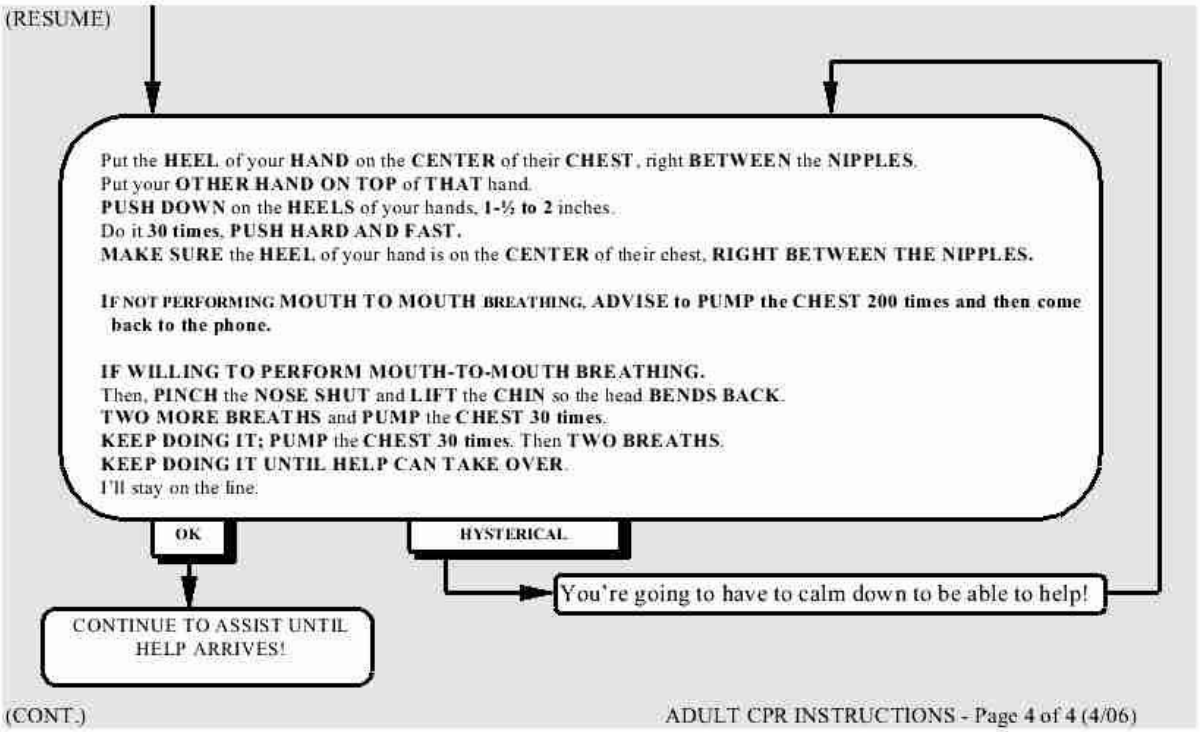
Go to CPR card for the appropriate age group.

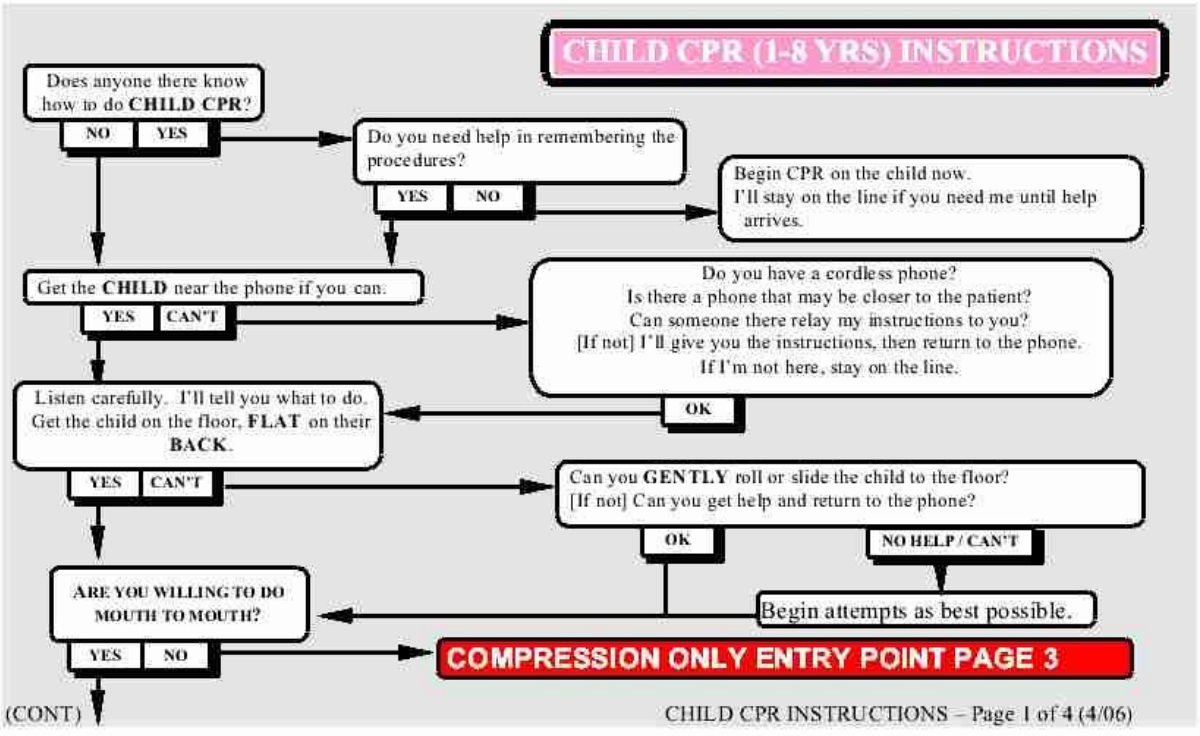
Prompts	Short Report
Agonal respirations are ineffective breaths which occur after cardiac arrest	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

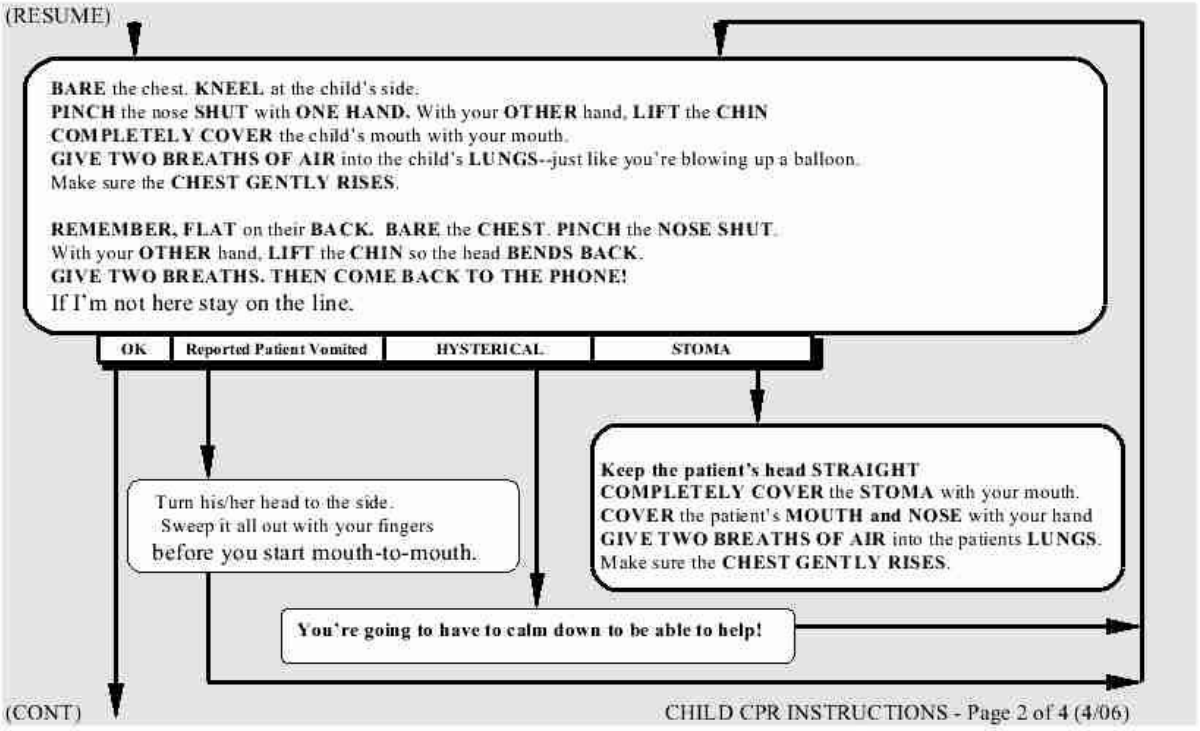


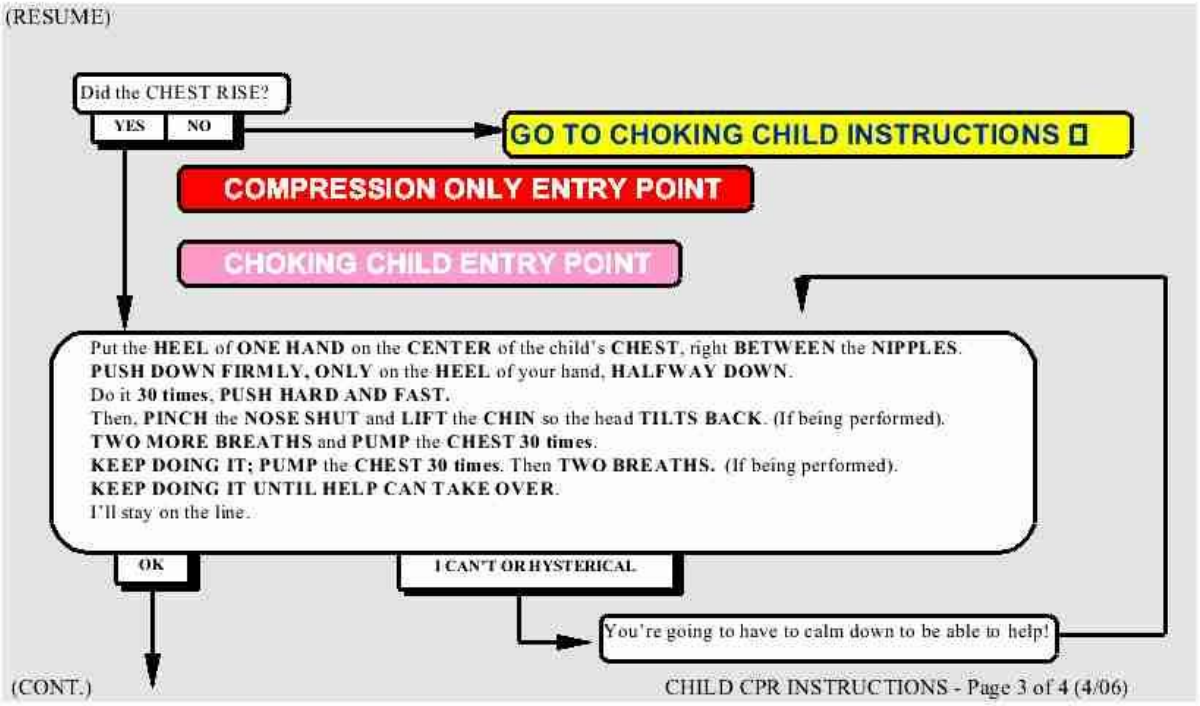

(RESUME)
BARE the chest. KNEEL at the patient's side.
PINCH the nose SHUT with ONE HAND. With your OTHER hand, LIFT the CHIN
COMPLETELY COVER their mouth with your mouth.
GIVE TWO BREATHS OF AIR into the patients LUNGS--just like you're blowing up a balloon.
Make sure the CHEST GENTLY RISES.
REMEMBER, FLAT on their BACK. BARE the CHEST. PINCH the NOSE SHUT.
With your OTHER hand, LIFT the CHIN so the head BENDS BACK.
GIVE TWO BREATHS. THEN COME BACK TO THE PHONE!
If I'm not here stay on the line.
OK
Reported Patient Vomited
HYSTERICAL
STOMA
Turn his/her head to the side.
Sweep it all out with your fingers
before you start mouth-to-mouth.
Keep the patient's head STRAIGHT>
COMPLETELY COVER the STOMA with your mouth.
COVER the patient's MOUTH and NOSE with your hand
GIVE TWO BREATHS OF AIR into the patients LUNGS.
Make sure the CHEST GENTLY RISES.
You're going to have to calm down to be able to help!
(CONT.)
ADULT CPR INSTRUCTIONS – Page 2 of 4 (4/06)

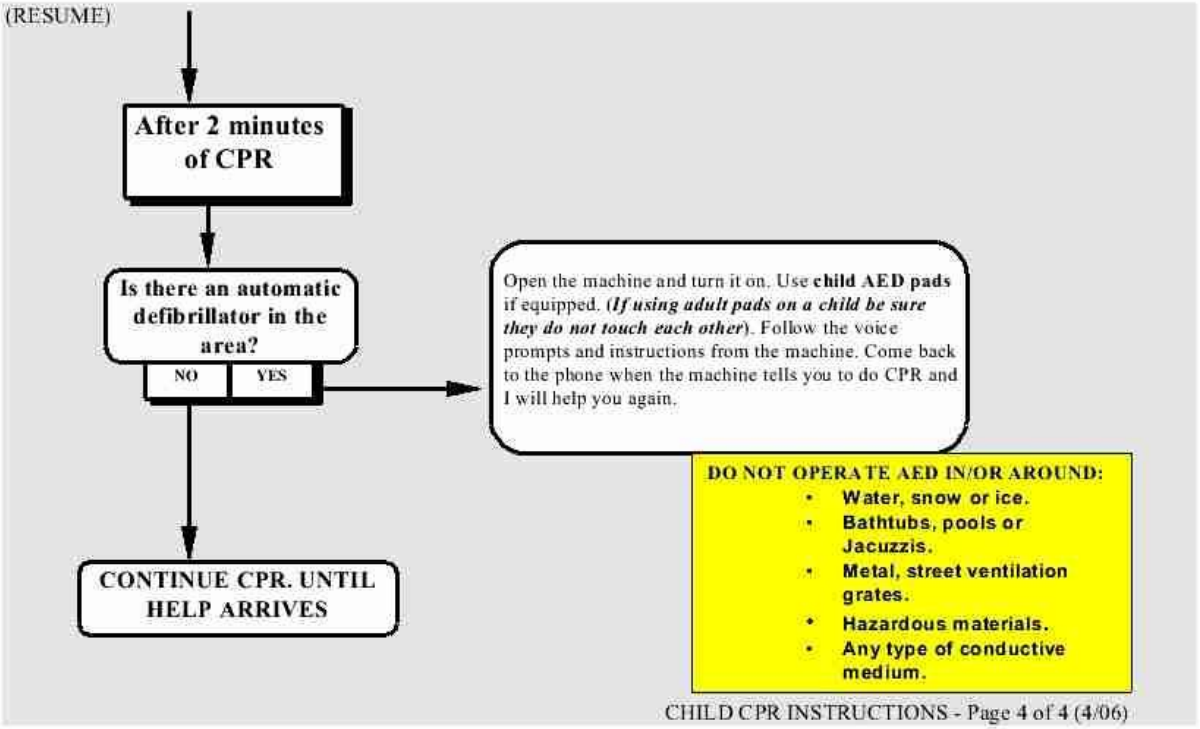

(RESUME)
Did the CHEST RISE?
YES
NO
GO TO CHOKING ADULT INSTRUCTIONS
COMPRESSION ONLY ENTRY POINT
CHOKING ADULT ENTRY POINT
Is there an automatic defibrillator in the area?
NO
YES
Open the machine and turn it on. Follow the voice prompts and instructions from the machine.
Use large size pads on adults.
Come back to the phone when the machine tells you to do CPR and I will help you.
DO NOT OPERATE AED IN/OR AROUND:
Water, snow or ice.
Bathtubs, pools or Jacuzzis.
Metal street ventilation gates.
Hazardous materials.
Any type of conductive medium.
(CONT.)
ADULT CPR INSTRUCTIONS - Page 3 of 4 (4/06)

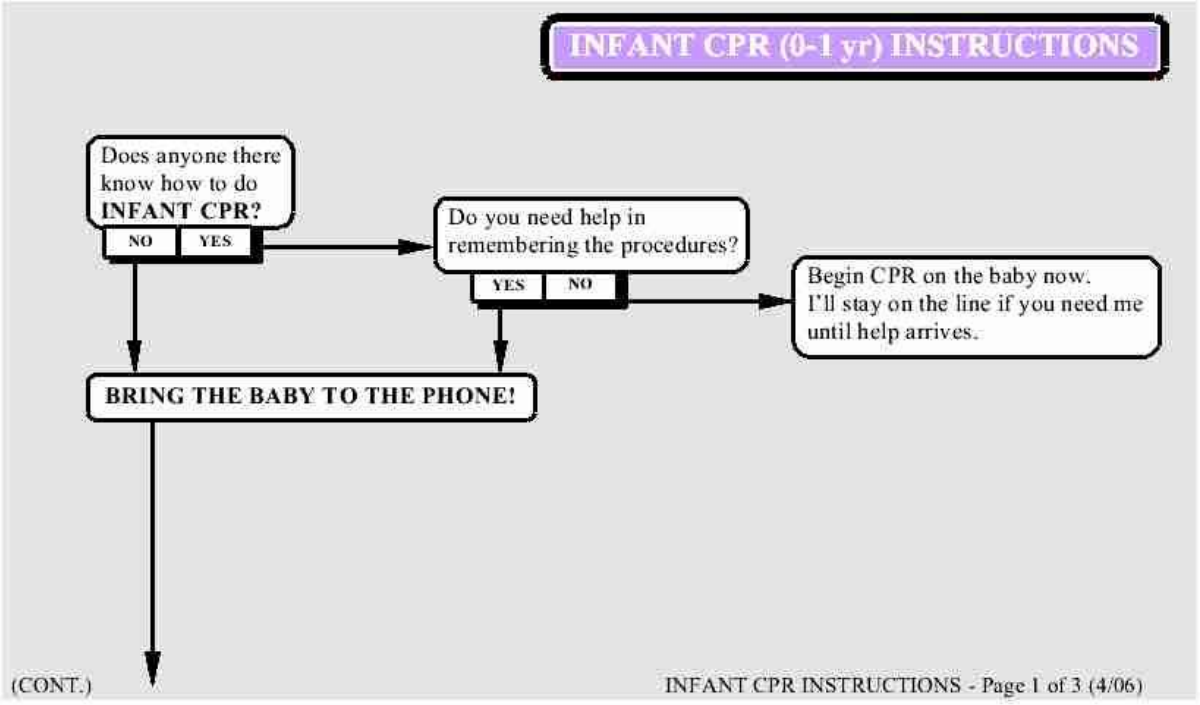

(RESUME)
Put the HEEL of your HAND on the CENTER of their CHEST, right BETWEEN the NIPPLES.
Put your OTHER HAND ON TOP of THAT hand.
PUSH DOWN on the HEELS of your hands, 1-½ to 2 inches.
Do it 30 times, PUSH HARD AND FAST.
MAKE SURE the HEEL of your hand is on the CENTER of their chest, RIGHT BETWEEN THE NIPPLES.
IF NOT PERFORMING MOUTH TO MOUTH BREATHING, ADVISE to PUMP the CHEST 200 times and then come back to the phone.
IF WILLING TO PERFORM MOUTH-TO-MOUTH BREATHING.
Then, PINCH the NOSE SHUT and LIFT the CHIN so the head BENDS BACK.
TWO MORE BREATHS and PUMP the CHEST 30 times.
KEEP DOING IT; PUMP the CHEST 30 times. Then TWO BREATHS.
KEEP DOING IT UNTIL HELP CAN TAKE OVER.
I'll stay on the line.
OK
HYSTERICAL
You're going to have to calm down to be able to help!
CONTINUE TO ASSIST UNTIL HELP ARRIVES!
(CONT.)
ADULT CPR INSTRUCTIONS - Page 4 of 4 (4/06)

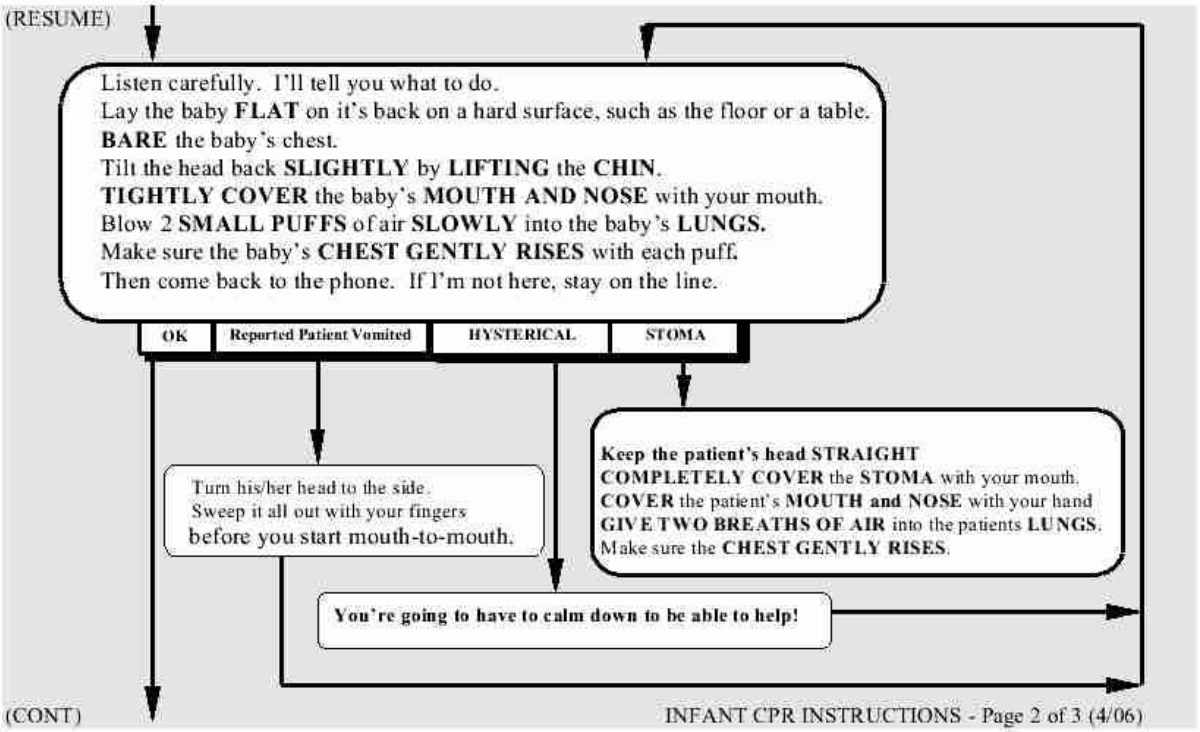

CHILD CPR (1-8 YRS) INSTRUCTIONS
Does anyone there know how to do CHILD CPR?
NO
YES
Do you need help in remembering the procedures?
YES
NO
Begin CPR on the child now.
I'll stay on the line if you need me until help arrives.
Get the CHILD near the phone if you can.
YES
CAN'T
Do you have a cordless phone?
Is there a phone that may be closer to the patient?
Can someone there relay my instructions to you?
[If not] I'll give you the instructions, then return to the phone.
If I'm not here, stay on the line.
OK
Listen carefully. I'll tell you what to do.
Get the child on the floor, FLAT on their BACK.
YES
CAN'T
Can you GENTLY roll or slide the child to the floor?
[If not] Can you get help and return to the phone?
OK
NO HELP / CAN'T
ARE YOU WILLING TO DO MOUTH TO MOUTH?
Begin attempts as best possible.
YES
NO
COMPRESSION ONLY ENTRY POINT PAGE 3
(CONT.)
CHILD CPR INSTRUCTIONS – Page 1 of 4 (4/06)

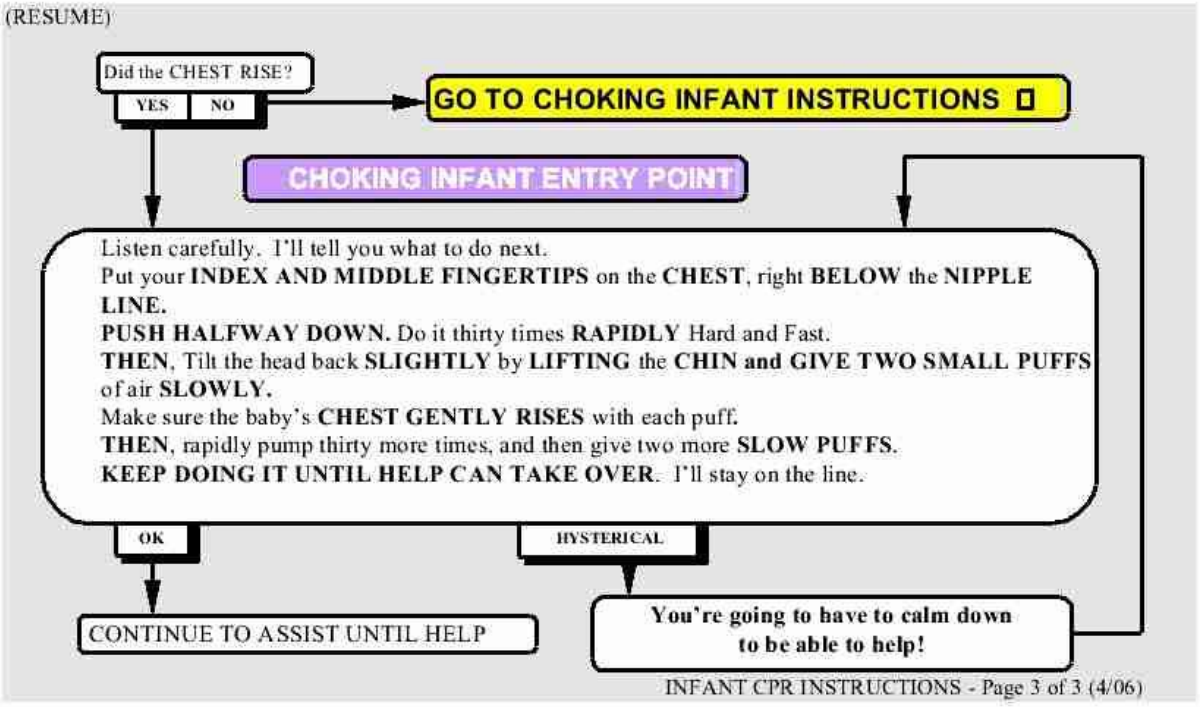

(RESUME)
BARE the chest. KNEEL at the child's side.
PINCH the nose SHUT with ONE HAND. With your OTHER hand, LIFT the CHIN
COMPLETELY COVER the child's mouth with your mouth.
GIVE TWO BREATHS OF AIR into the child's LUNGS--just like you're blowing up a balloon.
Make sure the CHEST GENTLY RISES.
REMEMBER, FLAT on their BACK. BARE the CHEST. PINCH the NOSE SHUT.
With your OTHER hand, LIFT the CHIN so the head BENDS BACK.
GIVE TWO BREATHS. THEN COME BACK TO THE PHONE!
If I'm not here stay on the line.
OK
Reported Patient Vomited
HYSTERICAL
STOMA
Turn his/her head to the side.
Sweep it all out with your fingers
before you start mouth-to-mouth.
Keep the patient's head STRAIGHT
COMPLETELY COVER the STOMA with your mouth.
COVER the patient's MOUTH and NOSE with your hand
GIVE TWO BREATHS OF AIR into the patients LUNGS.
Make sure the CHEST GENTLY RISES.
You're going to have to calm down to be able to help!
(CONT)
CHILD CPR INSTRUCTIONS - Page 2 of 4 (4/06)


(RESUME)
Did the CHEST RISE?
YES
NO
GO TO CHOKING CHILD INSTRUCTIONS
COMPRESSION ONLY ENTRY POINT
CHOKING CHILD ENTRY POINT
Put the HEEL of ONE HAND on the CENTER of the child's CHEST, right BETWEEN the NIPPLES.
PUSH DOWN FIRMLY, ONLY on the HEEL of your hand, HALFWAY DOWN.
Do it 30 times, PUSH HARD AND FAST.
Then, PINCH the NOSE SHUT and LIFT the CHIN so the head TILTS BACK. (If being performed).
TWO MORE BREATHS and PUMP the CHEST 30 times.
KEEP DOING IT; PUMP the CHEST 30 times. Then TWO BREATHS. (If being performed).
KEEP DOING IT UNTIL HELP CAN TAKE OVER.
I'll stay on the line.
OK
I CAN'T OR HYSTERICAL
You're going to have to calm down to be able to help!
(CONT.)
CHILD CPR INSTRUCTIONS - Page 3 of 4 (4/06)


(RESUME)
After 2 minutes of CPR
Is there an automatic defibrillator in the area?
NO
YES
Open the machine and turn it on. Use child AED pads if equipped. (If using adult pads on a child be sure they do not touch each other). Follow the voice prompts and instructions from the machine. Come back to the phone when the machine tells you to do CPR and I will help you again.
DO NOT OPERATE AED IN/OR AROUND:
• Water, snow or ice.
• Bathtubs, pools or Jacuzzis.
• Metal, street ventilation grates.
• Hazardous materials.
• Any type of conductive medium.
CONTINUE CPR. UNTIL HELP ARRIVES
CHILD CPR INSTRUCTIONS - Page 4 of 4 (4/06)


INFANT CPR (0-1 yr) INSTRUCTIONS
Does anyone there know how to do INFANT CPR?
NO
YES
Do you need help in remembering the procedures?
YES
NO
Begin CPR on the baby now. I'll stay on the line if you need me until help arrives.
BRING THE BABY TO THE PHONE!
(CONT.)
INFANT CPR INSTRUCTIONS - Page 1 of 3 (4/06)


(RESUME)
Listen carefully. I'll tell you what to do.
Lay the baby **FLAT** on it's back on a hard surface, such as the floor or a table.
BARE the baby's chest.
Tilt the head back **SLIGHTLY** by **LIFTING** the **CHIN**.
TIGHTLY COVER the baby's **MOUTH AND NOSE** with your mouth.
Blow 2 **SMALL PUFFS** of air **SLOWLY** into the baby's **LUNGS.**
Make sure the baby's **CHEST GENTLY RISES** with each puff.
Then come back to the phone. If I'm not here, stay on the line.
OK
Reported Patient Vomited
HYSTERICAL
STOMA
Turn his/her head to the side.
Sweep it all out with your fingers
before you start mouth-to-mouth.
Keep the patient's head STRAIGHT
COMPLETELY COVER the **STOMA** with your mouth.
COVER the patient's **MOUTH and NOSE** with your hand
GIVE TWO BREATHS OF AIR into the patients **LUNGS.**
Make sure the **CHEST GENTLY RISES.**
You're going to have to calm down to be able to help!
(CONT)
INFANT CPR INSTRUCTIONS - Page 2 of 3 (4/06)


(RESUME)
Did the CHEST RISE?
YES
NO
GO TO CHOKING INFANT INSTRUCTIONS
CHOKING INFANT ENTRY POINT
Listen carefully. I'll tell you what to do next.
Put your **INDEX AND MIDDLE FINGERTIPS** on the **CHEST**, right **BELOW** the **NIPPLE LINE.**
PUSH HALFWAY DOWN. Do it thirty times **RAPIDLY** Hard and Fast.
THEN, Tilt the head back **SLIGHTLY** by **LIFTING** the **CHIN and GIVE TWO SMALL PUFFS** of air **SLOWLY.**
Make sure the baby's **CHEST GENTLY RISES** with each puff.
THEN, rapidly pump thirty more times, and then give two more **SLOW PUFFS.**
KEEP DOING IT UNTIL HELP CAN TAKE OVER. I'll stay on the line.
OK
HYSTERICAL
CONTINUE TO ASSIST UNTIL HELP
You're going to have to calm down to be able to help!
INFANT CPR INSTRUCTIONS - Page 3 of 3 (4/06)

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CHOKING

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?

Is patient breathing normally?
(Consider breathing card)

Describe the breathing.
Does the chest rise?
Does air enter freely?

Is the patient able to speak or cry?

Is the patient turning blue?

How old is the patient?

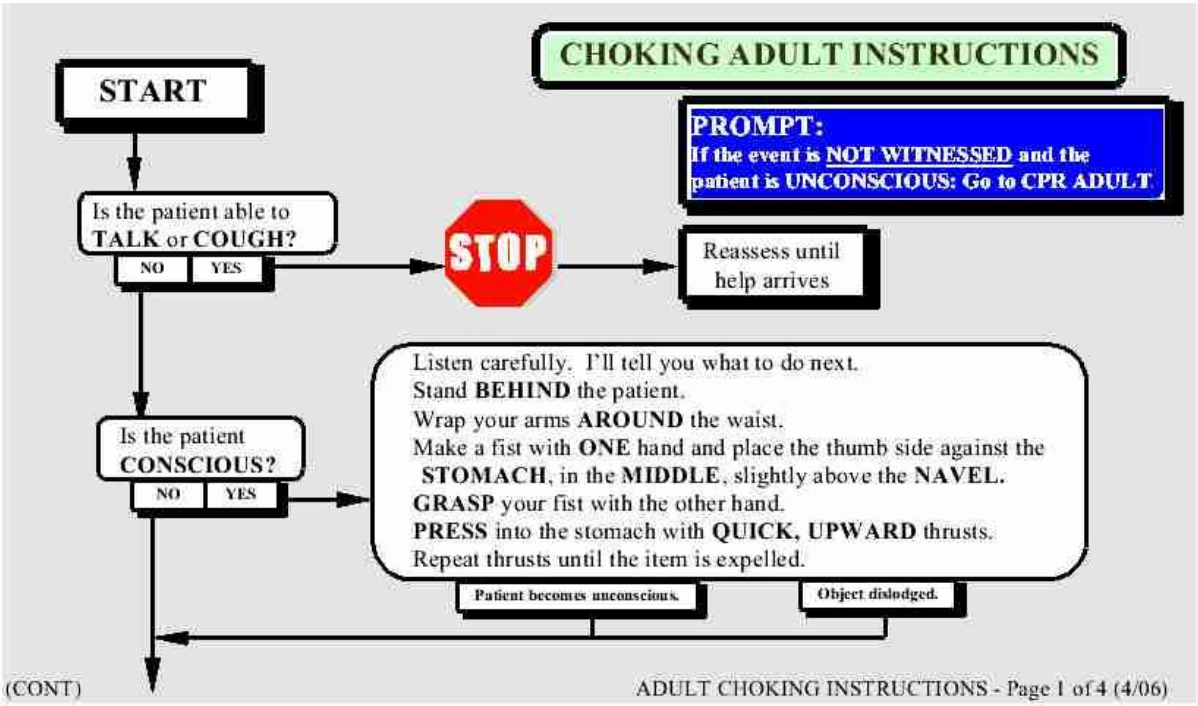
SIMULTANEOUS ALS/BLS	BLS DISPATCH
DISPATCH	
Unconscious/not breathing normally. Unable to talk or cry. Turning blue.	Able to speak or cry. Exchanging air with no breathing difficulty. Airway cleared, patient assist.

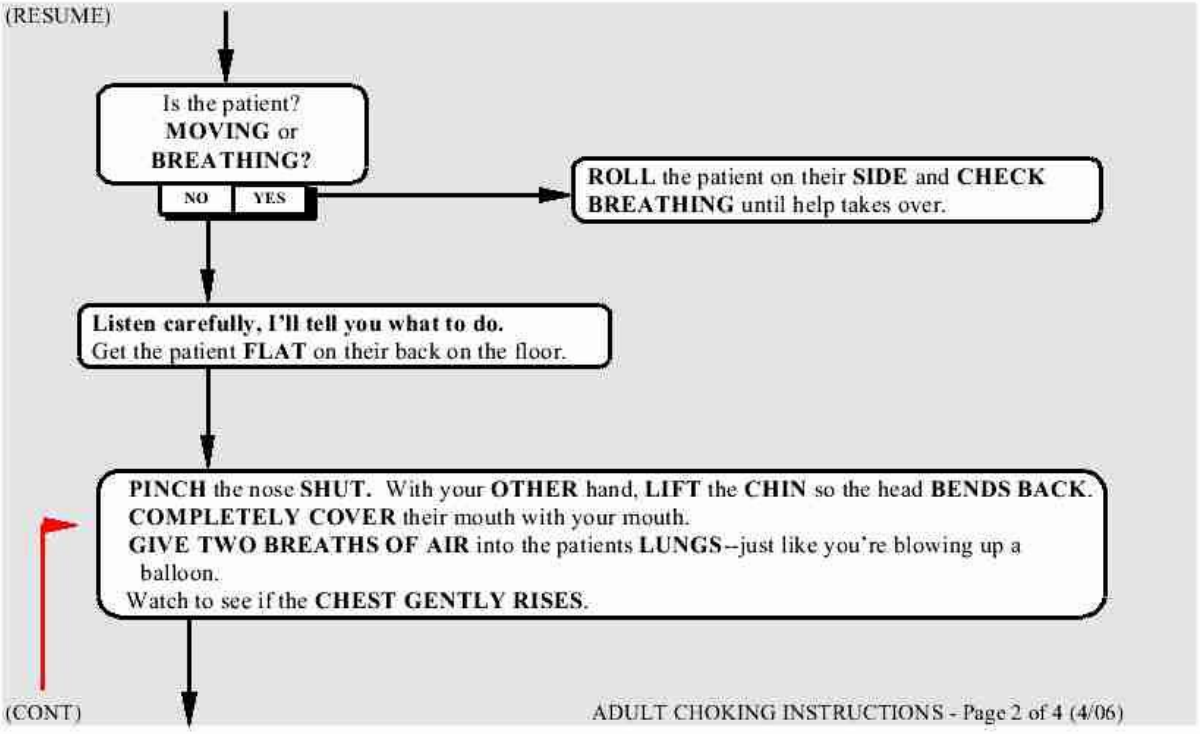
CHOKING Pre-Arrival Instructions

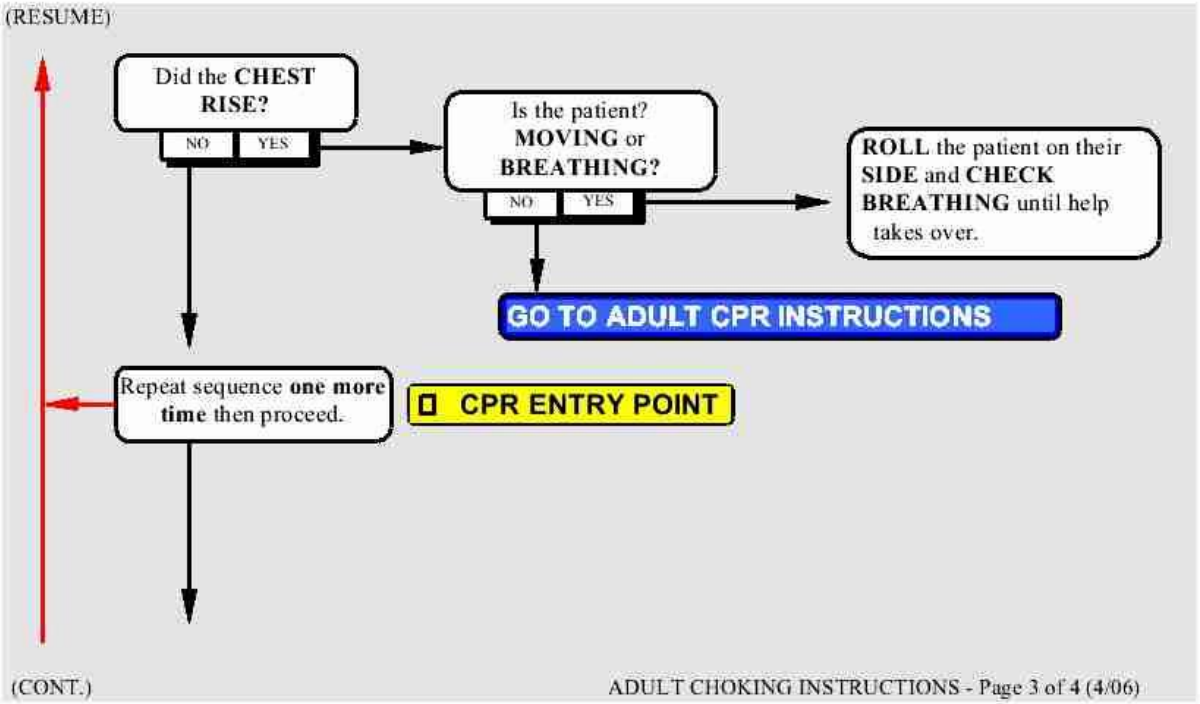
Determine age group.

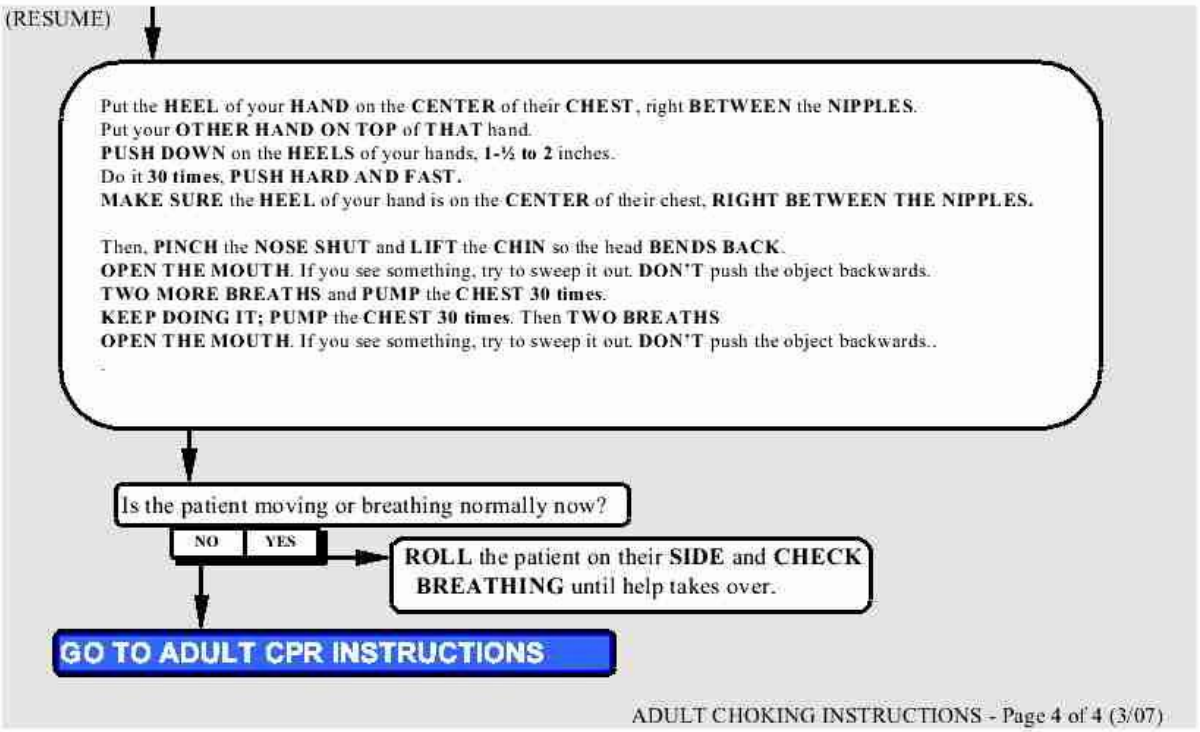
Go to choking card for the appropriate age group

Prompts	Short Report
Determine age group Go to CHOKING (OBSTRUCTED AIRWAY) instructions	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

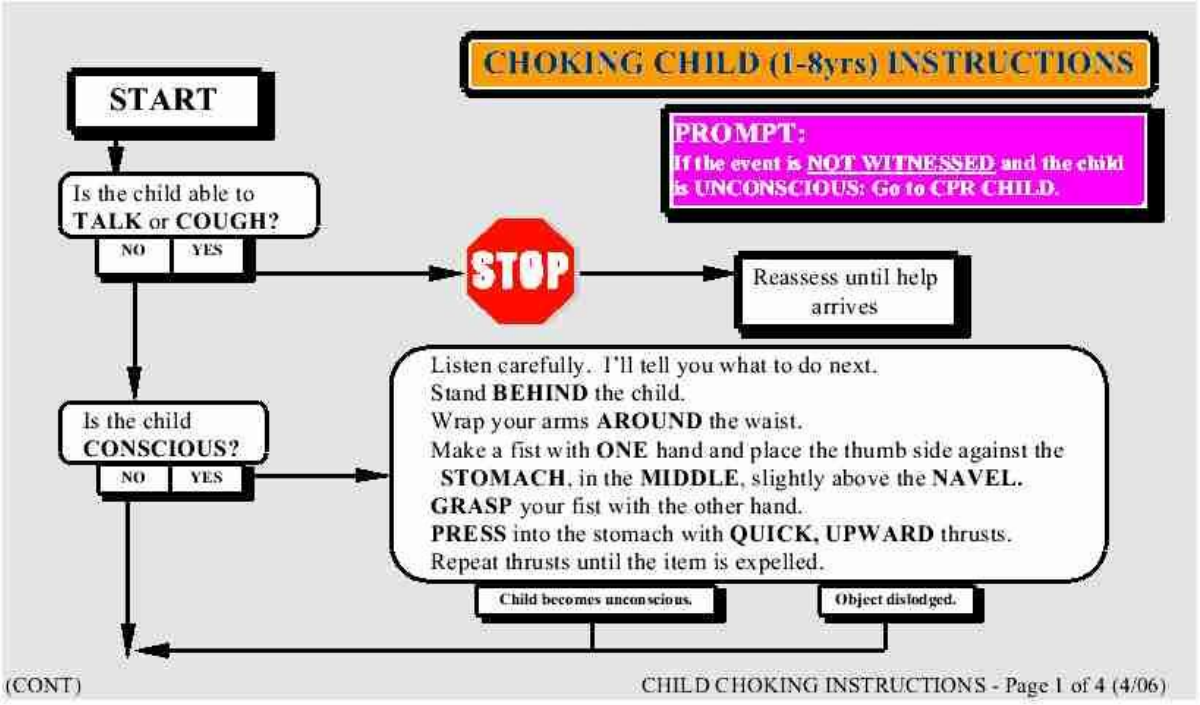



(RESUME)
Is the patient?
MOVING or
BREATHING?
NO
YES
ROLL the patient on their SIDE and CHECK BREATHING until help takes over.
Listen carefully, I'll tell you what to do.
Get the patient FLAT on their back on the floor.
PINCH the nose SHUT. With your OTHER hand, LIFT the CHIN so the head BENDS BACK.
COMPLETELY COVER their mouth with your mouth.
GIVE TWO BREATHS OF AIR into the patients LUNGS--just like you're blowing up a balloon.
Watch to see if the CHEST GENTLY RISES.
(CONT)
ADULT CHOKING INSTRUCTIONS - Page 2 of 4 (4/06)

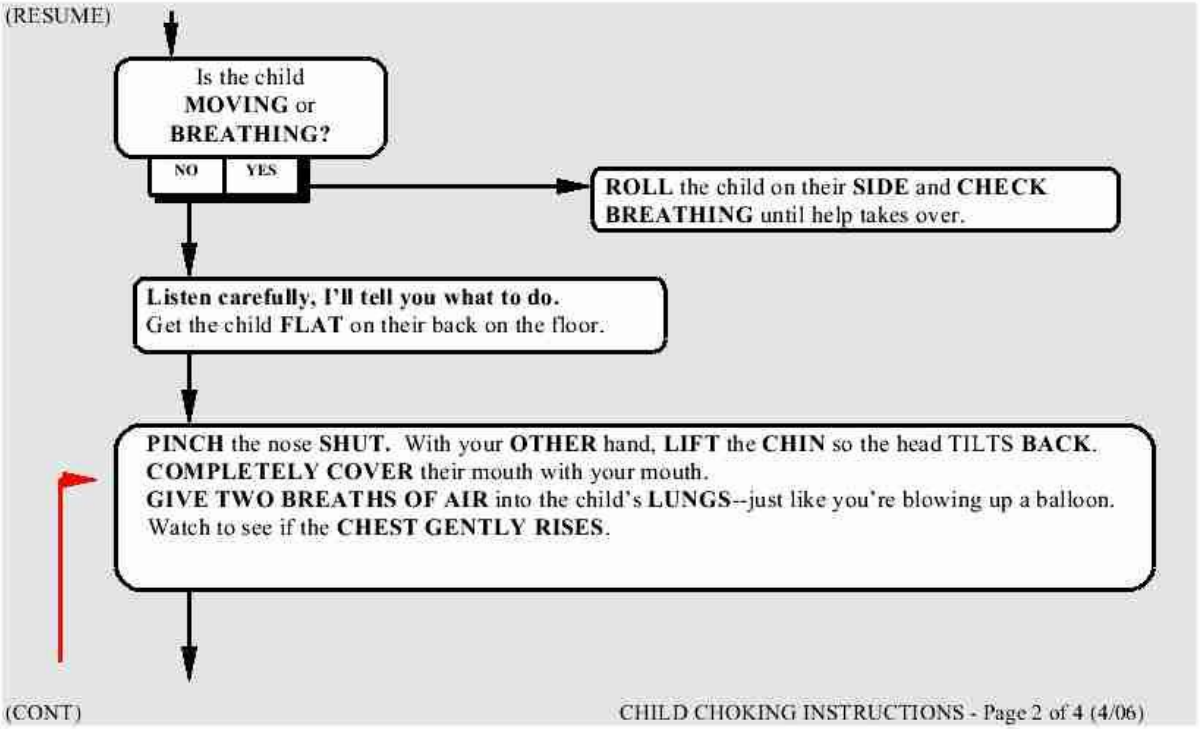

(RESUME)
Did the CHEST RISE?
NO
YES
Is the patient?
MOVING or
BREATHING?
NO
YES
ROLL the patient on their SIDE and CHECK BREATHING until help takes over.
GO TO ADULT CPR INSTRUCTIONS
Repeat sequence one more time then proceed.
CPR ENTRY POINT
(CONT.)
ADULT CHOKING INSTRUCTIONS - Page 3 of 4 (4/06)

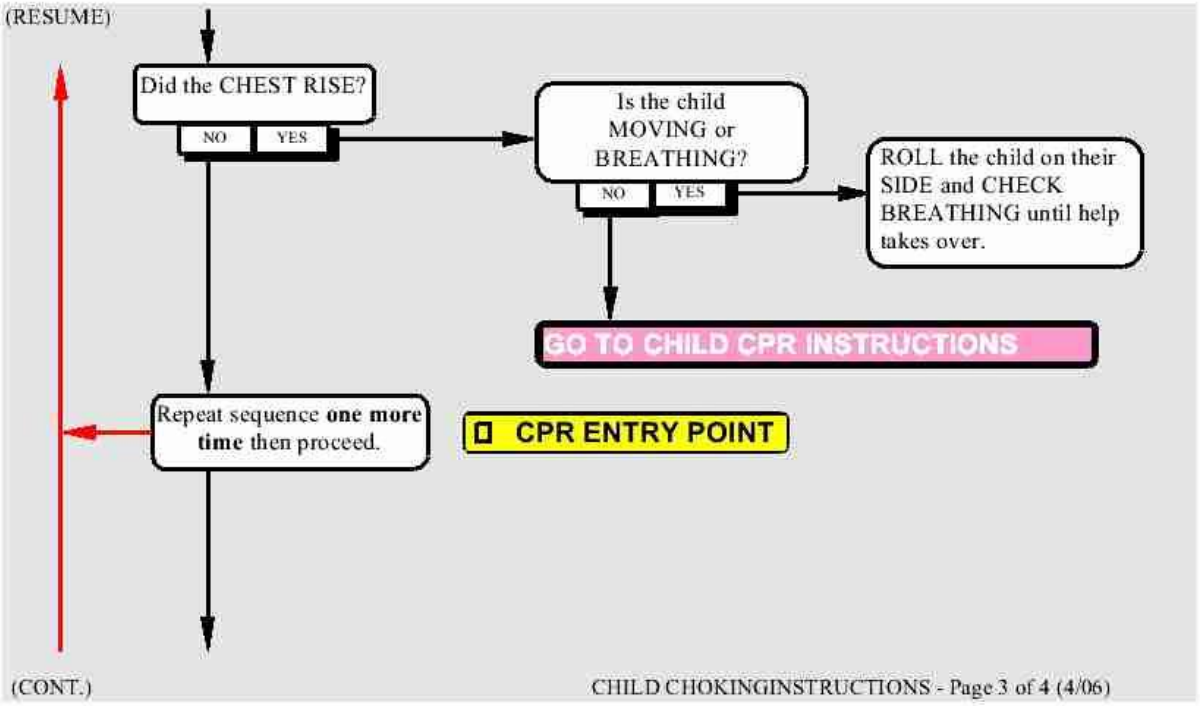


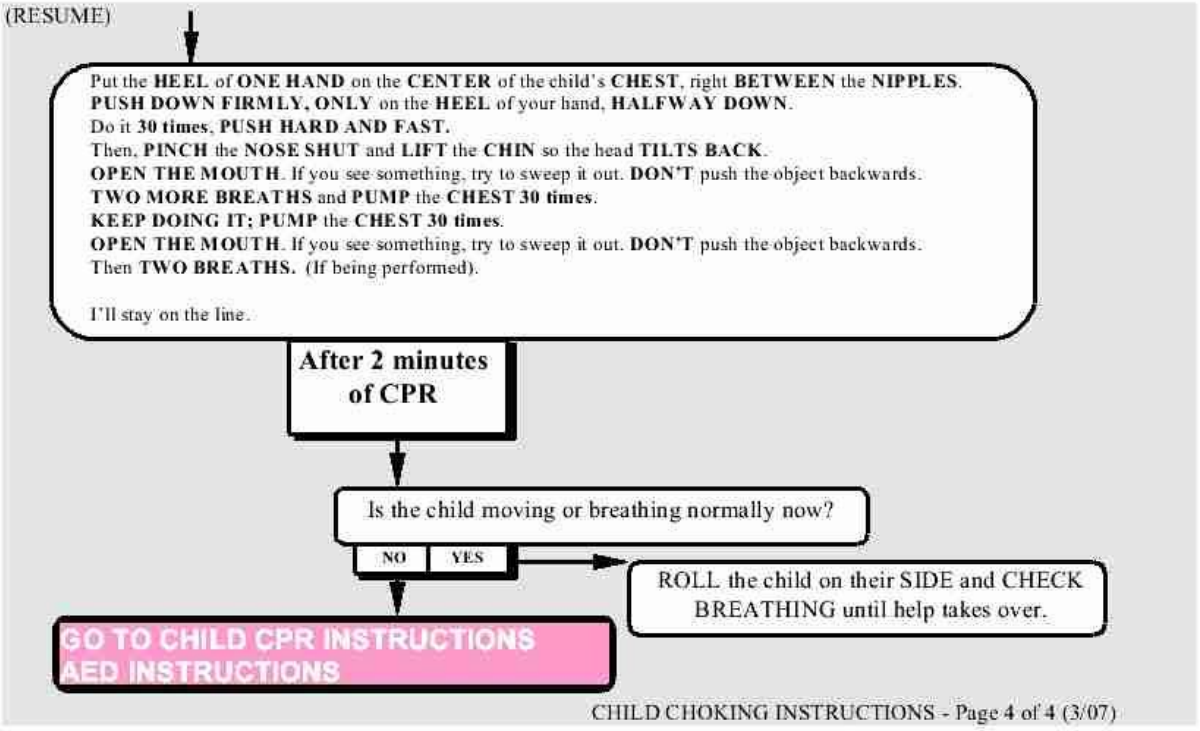
ADULT CHOKING INSTRUCTIONS - Page 4 of 4 (3/07)

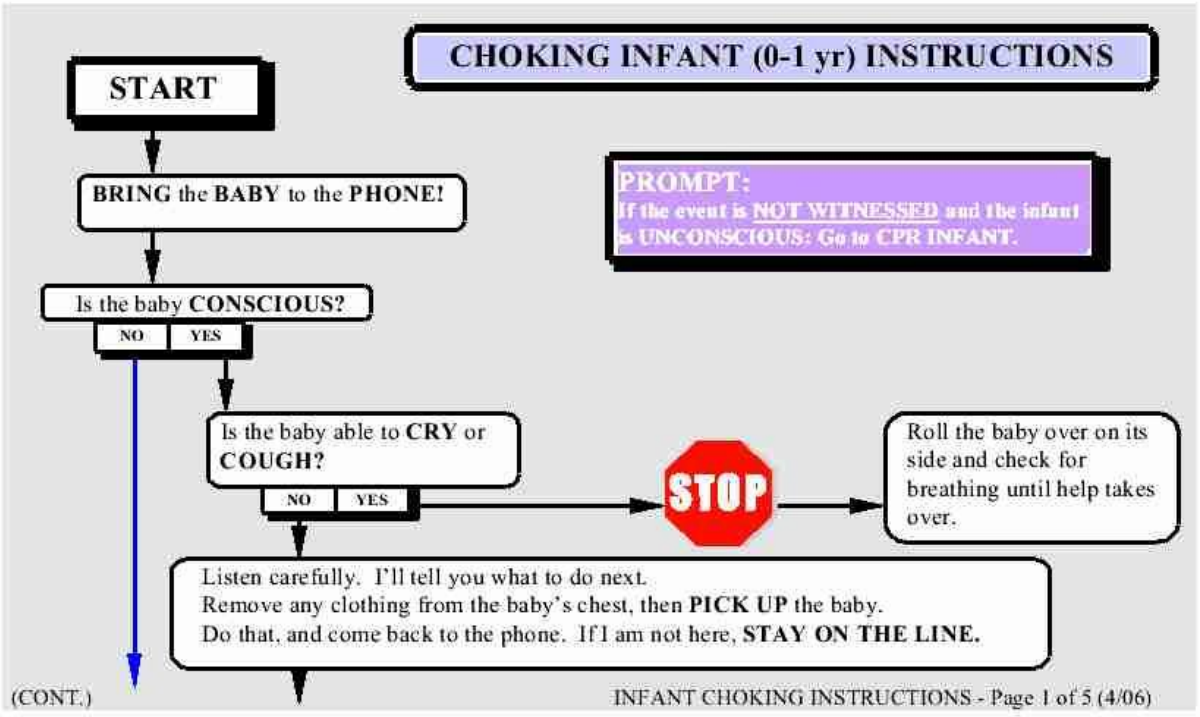


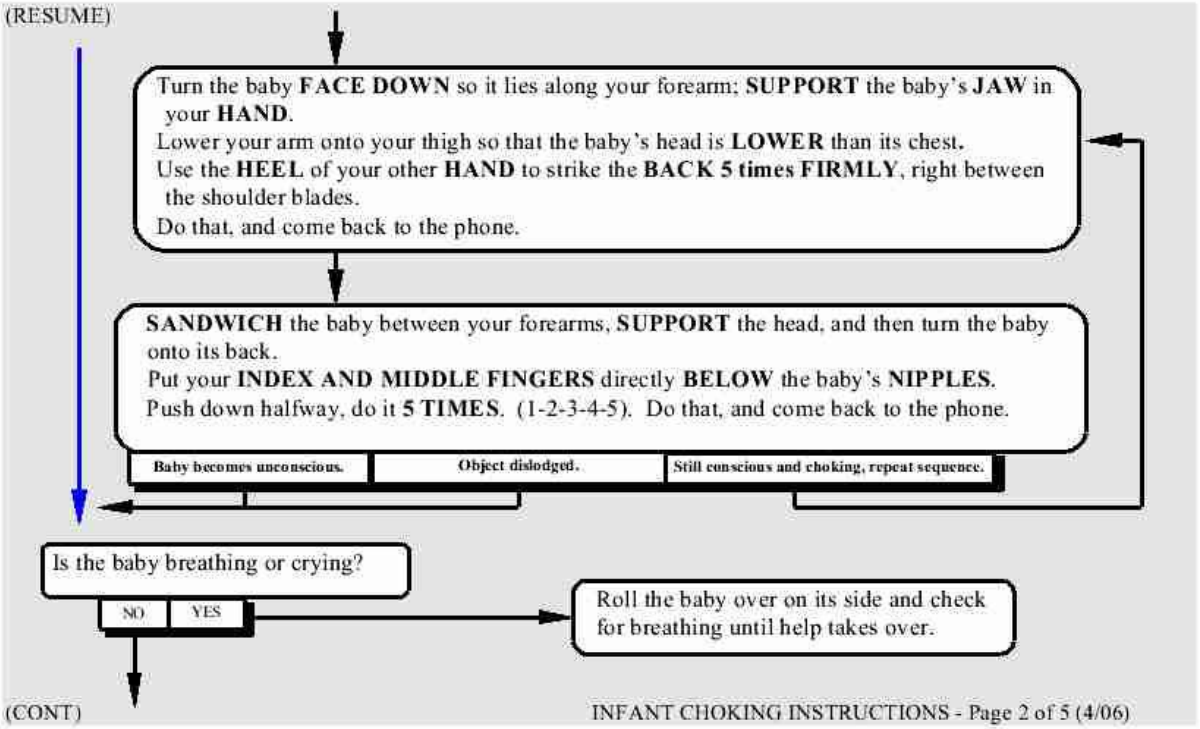
CHILD CHOKING INSTRUCTIONS - Page 1 of 4 (4/06)

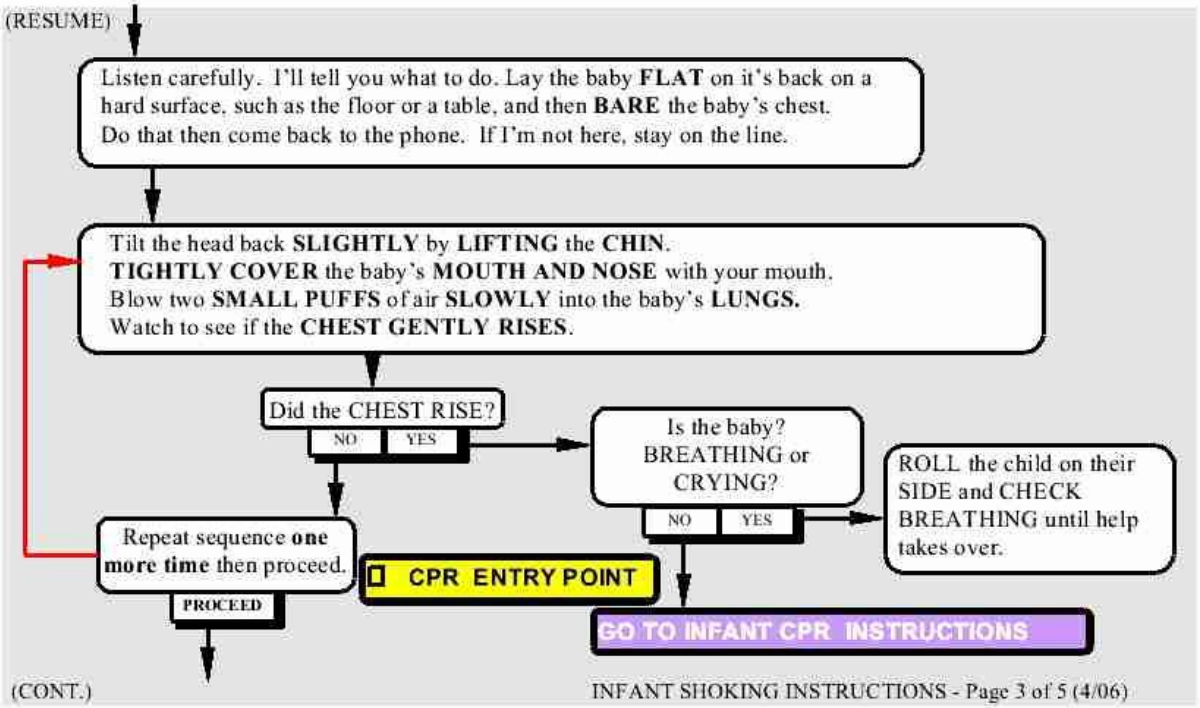

(RESUME)
Is the child **MOVING** or **BREATHING?**
NO
YES
ROLL the child on their **SIDE** and **CHECK BREATHING** until help takes over.
Listen carefully, I'll tell you what to do.
Get the child **FLAT** on their back on the floor.
PINCH the nose **SHUT.** With your **OTHER** hand, **LIFT** the **CHIN** so the head TILTS **BACK.**
COMPLETELY COVER their mouth with your mouth.
GIVE TWO BREATHS OF AIR into the child's **LUNGS**--just like you're blowing up a balloon.
Watch to see if the **CHEST GENTLY RISES.**
(CONT)
CHILD CHOKING INSTRUCTIONS - Page 2 of 4 (4/06)


(RESUME)
Did the CHEST RISE?
NO
YES
Is the child MOVING or BREATHING?
NO
YES
ROLL the child on their SIDE and CHECK BREATHING until help takes over.
GO TO CHILD CPR INSTRUCTIONS
Repeat sequence **one more time** then proceed.
CPR ENTRY POINT
(CONT.)
CHILD CHOKINGINSTRUCTIONS - Page 3 of 4 (4/06)


(RESUME)
Put the HEEL of ONE HAND on the CENTER of the child's CHEST, right BETWEEN the NIPPLES.
PUSH DOWN FIRMLY, ONLY on the HEEL of your hand, HALFWAY DOWN.
Do it 30 times, PUSH HARD AND FAST.
Then, PINCH the NOSE SHUT and LIFT the CHIN so the head TILTS BACK.
OPEN THE MOUTH. If you see something, try to sweep it out. DON'T push the object backwards.
TWO MORE BREATHS and PUMP the CHEST 30 times.
KEEP DOING IT; PUMP the CHEST 30 times.
OPEN THE MOUTH. If you see something, try to sweep it out. DON'T push the object backwards.
Then TWO BREATHS. (If being performed).
I'll stay on the line.
After 2 minutes of CPR
Is the child moving or breathing normally now?
NO
YES
ROLL the child on their SIDE and CHECK BREATHING until help takes over.
GO TO CHILD CPR INSTRUCTIONS
AED INSTRUCTIONS
CHILD CHOKING INSTRUCTIONS - Page 4 of 4 (3/07)


CHOKING INFANT (0-1 yr) INSTRUCTIONS
START
BRING the BABY to the PHONE!
PROMPT:
If the event is NOT WITNESSED and the infant is UNCONSCIOUS: Go to CPR INFANT.
Is the baby CONSCIOUS?
NO
YES
Is the baby able to CRY or COUGH?
NO
YES
STOP
Roll the baby over on its side and check for breathing until help takes over.
Listen carefully. I'll tell you what to do next.
Remove any clothing from the baby's chest, then PICK UP the baby.
Do that, and come back to the phone. If I am not here, STAY ON THE LINE.
(CONT.)
INFANT CHOKING INSTRUCTIONS - Page 1 of 5 (4/06)


(RESUME)
Turn the baby **FACE DOWN** so it lies along your forearm; **SUPPORT** the baby's **JAW** in your **HAND**.
Lower your arm onto your thigh so that the baby's head is **LOWER** than its chest.
Use the **HEEL** of your other **HAND** to strike the **BACK 5 times FIRMLY**, right between the shoulder blades.
Do that, and come back to the phone.
SANDWICH the baby between your forearms, **SUPPORT** the head, and then turn the baby onto its back.
Put your **INDEX AND MIDDLE FINGERS** directly **BELOW** the baby's **NIPPLES**.
Push down halfway, do it **5 TIMES**. (1-2-3-4-5). Do that, and come back to the phone.
Baby becomes unconscious.
Object dislodged.
Still conscious and choking, repeat sequence.
Is the baby breathing or crying?
NO
YES
Roll the baby over on its side and check for breathing until help takes over.
(CONT)
INFANT CHOKING INSTRUCTIONS - Page 2 of 5 (4/06)


(RESUME)
Listen carefully. I'll tell you what to do. Lay the baby **FLAT** on it's back on a hard surface, such as the floor or a table, and then **BARE** the baby's chest.
Do that then come back to the phone. If I'm not here, stay on the line.
Tilt the head back **SLIGHTLY** by **LIFTING** the **CHIN**.
TIGHTLY COVER the baby's **MOUTH AND NOSE** with your mouth.
Blow two **SMALL PUFFS** of air **SLOWLY** into the baby's **LUNGS.**
Watch to see if the **CHEST GENTLY RISES**.
Did the CHEST RISE?
NO
YES
Is the baby? BREATHING or CRYING?
NO
YES
ROLL the child on their SIDE and CHECK BREATHING until help takes over.
Repeat sequence **one more time** then proceed.
PROCEED
CPR ENTRY POINT
GO TO INFANT CPR INSTRUCTIONS
(CONT.)
INFANT SHOKING INSTRUCTIONS - Page 3 of 5 (4/06)

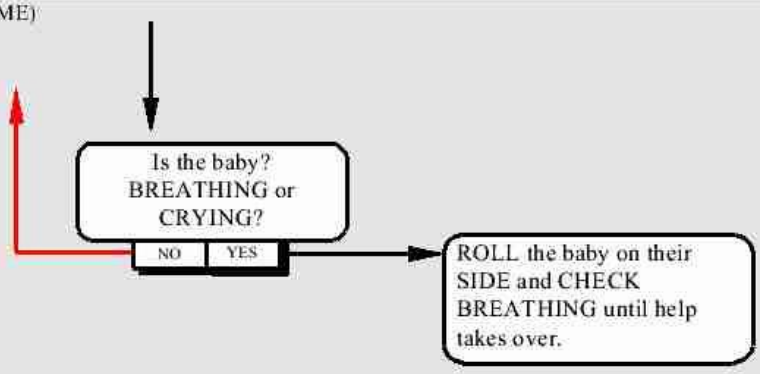
(RESUME)

Listen carefully. I'll tell you what to do next.
Put your **INDEX AND MIDDLE FINGERTIPS** on the **CHEST**, right **BELOW** the **NIPPLE LINE.**
PUSH HALFWAY DOWN. Do it thirty times **RAPIDLY** Hard and Fast.
THEN, Tilt the head back **SLIGHTLY** by **LIFTING** the **CHIN**
LOOK INTO THE BABY's MOUTH, if you see anything try to remove it with your little finger by sweeping it out. **DON'T** push the object backwards
GIVE TWO SMALL PUFFS of air **SLOWLY.**

THEN, rapidly pump thirty more times.
LOOK INTO THE BABY's MOUTH, if you see anything try to remove it with your little finger by sweeping it out. **DON'T** push the object backwards
Then give two more **SLOW PUFFS**.
KEEP DOING IT UNTIL HELP CAN TAKE OVER. I'll stay on the line.

(CONT)

(RESUME)



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DROWNING (POSSIBLE)

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?

Is patient breathing normally? (Consider breathing card)

How long was the patient under water?

Is this a scuba diving accident?

Has the patient been removed from the water?

Is the patient on land or in a boat?

What was the patient doing before the accident?

SIMULTANEOUS ALS/BLS	BLS DISPATCH
Unconscious, not breathing normally. Difficulty breathing. Scuba diving accident. Diving accident (possibility of C-spine injury.) Fractured femur (thigh).	Patient not submerged. Patient coughing. Other injuries without critical symptoms. Minor injury (lacerations/fractures).

DISPATCH

DROWNING (POSSIBLE) Pre-Arrival Instructions

Do not attempt to rescue patient, unless trained to do so.

Do not move patient around

Gather patient medications, if possible.

If the patient's condition changes, call me back.

Keep patient warm.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group. Are boats needed? Is SCUBA team needed?	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

ELECTROCUTION

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?

Is patient breathing normally? (Consider breathing card)

If household electrocution, was it the dryer, stove, or other 220 volt source.

Is patient still in contact with the source?

Are there any other injuries? If so what are they?

SIMULTANEOUS ALS/BLS	BLS DISPATCH
Unconscious/not breathing normally. Decreased level of consciousness. Multiple Casualty Incident Criteria. Reported DOA until evaluation by responsible party. Burns to airway, nose, or mouth. Burns over 20% of body surface. Burns from 220 volt or higher source	Household electrical shock without critical symptoms

DISPATCH

ELECTROCUTION Pre-Arrival Instructions

Beware of ground moisture.

Do not touch the patient if in contact with the source of electricity.

Beware of liquid spills that could conduct electricity.

If it is safe to do so, turn off the power.

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group. Is fire department needed?	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units

PREGNANCY / CHILDBIRTH

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?
Is patient breathing normally? (Consider breathing card)
Was there an injury? What is it?
Has she had a seizure?
Is she bleeding?
If yes, is the bleeding like a period, spotting, or heavy flow?
How does she feel when she sits up?
Has she had any problems during pregnancy or anticipated problems?
Is she having cramping pains that come and go?
If yes, how often?
Does she feel the urge to go to the bathroom?
Is this the first pregnancy?
How far along is she?
If this is not the first pregnancy, during the previous pregnancy:
- How long was she in labor before delivery?
- Were there any complications?
- Was the delivery vaginal or surgical?

If post delivery, is the baby breathing?

DISPATCH	SIMULTANEOUS ALS/BLS	BLS DISPATCH
	Unconscious/not breathing normally. Imminent delivery OR Delivery. Vaginal bleeding with fainting. Fainting/near fainting with patient sitting up. Prior history of complicated delivery. Bleeding, greater than 20 weeks pregnant Premature active labor greater than 4 weeks premature. Abdominal injury, if greater than 20 weeks pregnant. Seizure. Multiple births.	Delivery not imminent. Vaginal bleeding without fainting if under 20 weeks pregnant. Abdominal injury, if less than 20 weeks pregnant. Water broke. Pregnant less than 20 weeks or menstrual with any of the following: Cramps Pelvic Pain Spotting

PREGNANCY / CHILDBIRTH Pre-Arrival Instructions

Do not use the toilet.

Have the patient lie down on her left side.

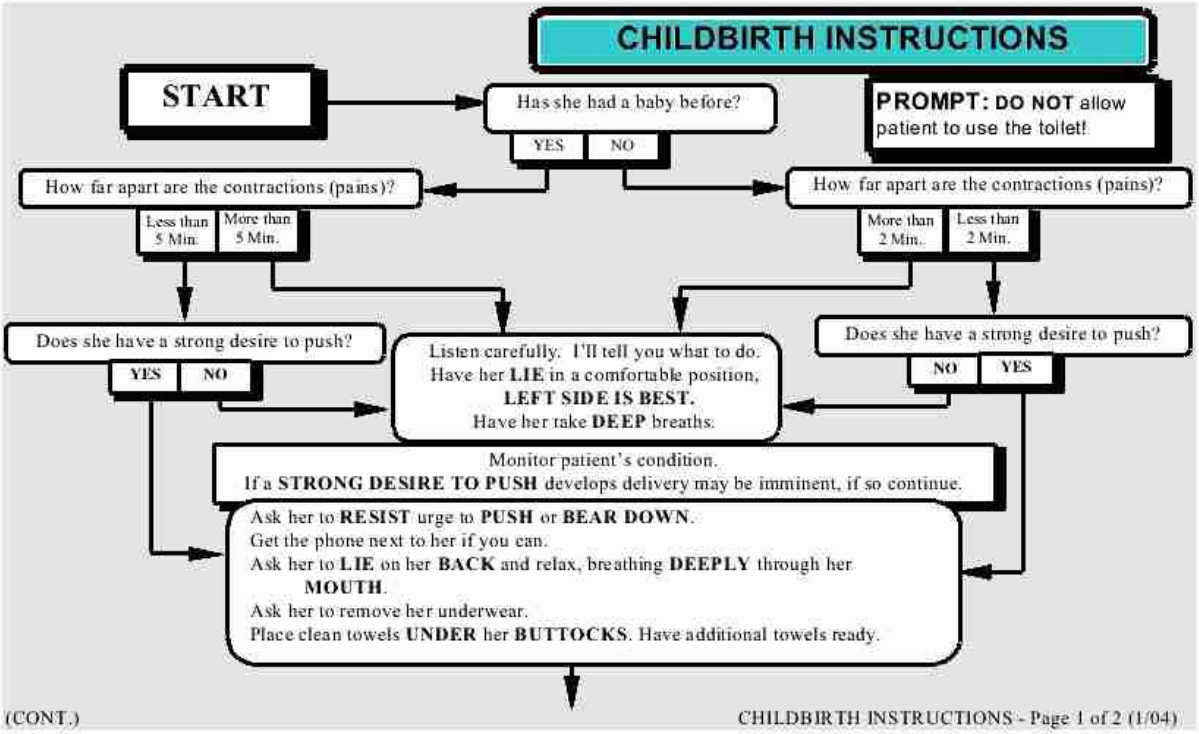
Keep the patient warm.

Gather patient medications, if any.

Do not flush toilet or dispose of used pads.

If the patient's condition changes, call me back.

Prompts	Short Report
If unconscious, go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group. Imminent and post delivery, go to CHILDBIRTH instructions	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units



(CONT.)

CHILDBIRTH INSTRUCTIONS - Page 1 of 2 (1/04)

(RESUME)

<<< If she starts to deliver (water broken, bloody discharge, baby's head appears) >>>

The baby's head should appear first. **CRADLE** it and the rest of the baby as it is delivered.
DO NOT PUSH OR PULL.
There will be water and blood with delivery. **THIS IS NORMAL.**
When the baby is delivered, **CLEAN** out it's **MOUTH** and **NOSE** with a **CLEAN, DRY CLOTH.**
DO NOT attempt to **CUT** or **PULL** the cord.
Wrap the baby in a dry blanket, a towel, or whatever is handy, and place it between the mother's legs on the floor. Massage the mother's lower abdomen very gently.
If the baby **DOES NOT** start breathing on its own, rub its back or gently slap the soles of its feet.
If the baby **DOESN'T** begin breathing **IMMEDIATELY**, come back to the phone.

COMPLICATIONS with delivery | Baby delivered and **BREATHING** | Baby delivered and **NOT BREATHING**

GO TO CHOKING INFANT INSTRUCTIONS

<<When the placenta (tissue on the other end of the umbilical cord) is delivered.>>

WRAP IT. This delivery may take as long as twenty minutes.
Keep the placenta LEVEL or SLIGHTLY ABOVE the baby.

<< If there are complications (leg, arm, buttocks, or umbilical cord presenting) >>

REASSURE the mother. Tell her you have dispatched aid.
Ask her to remain on her **BACK** with her **KNEES BENT.**
Ask her to **RELAX** and **BREATHE** through her **MOUTH.**
Tell her **NOT TO PUSH.**

UNCONSCIOUS / FAINTING

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Is patient alert?
Is patient breathing normally?
(Consider breathing card)
Is this the first time today the patient has been unconscious?
Have you or anyone else tried to wake the patient up?
Has the patient taken any medication or recreational drugs with alcohol?
What was the patient doing before they became unconscious?
Does the patient have any medical or surgical history?
What?

Did the patient have any complaints just before they became unconscious?
What were they?
How does the patient act when they sit up?
Is the patient able to respond to you and follow simple commands?
Can the patient answer your questions?
Has the patient been drinking alcohol?
Does the patient have a medic alert tag?
If yes, what does it say?

DISPATCH	SIMULTANEOUS ALS/BLS	BLS DISPATCH
	Unconscious/not breathing normally. Multiple fainting (syncopal) episodes (same day). Confirmed unconscious/unresponsive greater then one minute. Combined drugs and alcohol overdose. Difficulty breathing. Fainting associated with: Headache, Chest pain/discomfort/palpitations, Diabetic, GI/Vaginal Bleeding, Abdominal pain, Sitting/Standing, or Continued decreased level of consciousness. Single fainting if over 50 years. Alcohol intoxication, can not be aroused	Unconscious, but now conscious without critical symptoms. Unconfirmed slumped over wheel. Conscious with minor injuries. Known alcohol intoxication without other drugs, can be aroused. Near Syncope (fainting) without critical criteria.

UNCONSCIOUS / FAINTING Pre-Arrival Instructions

Have patient lie down.

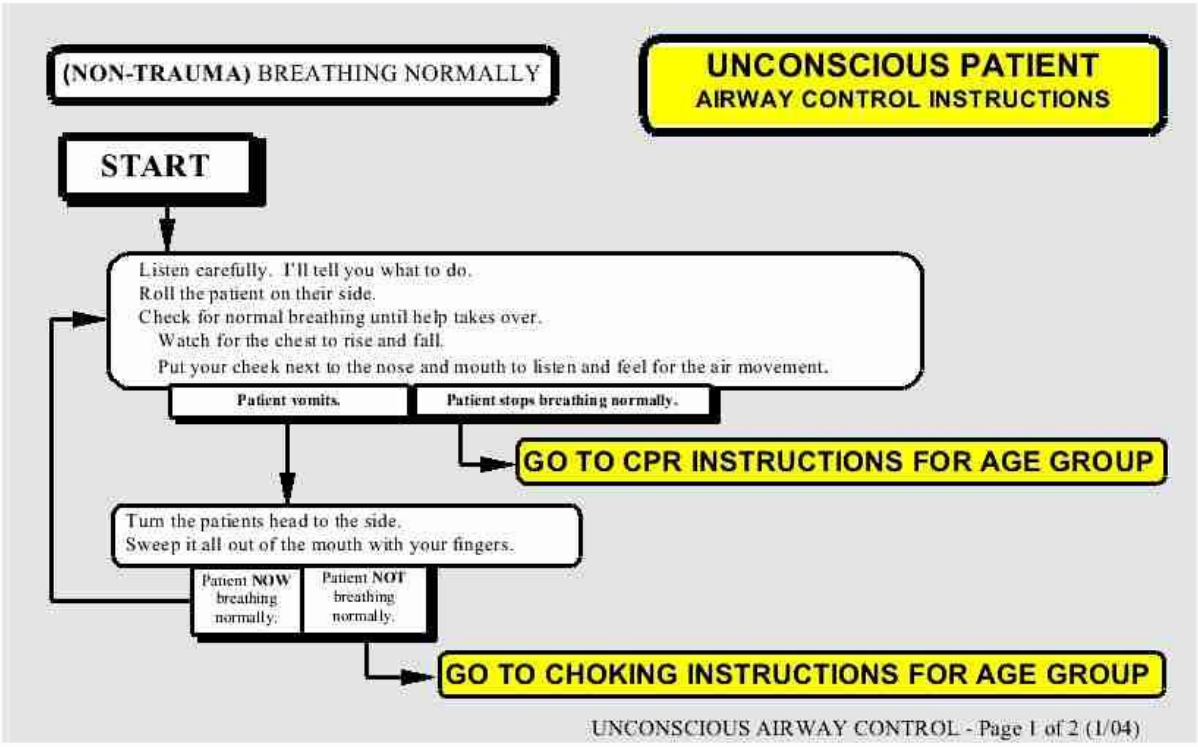
If patient is vomiting, lay patient on side.

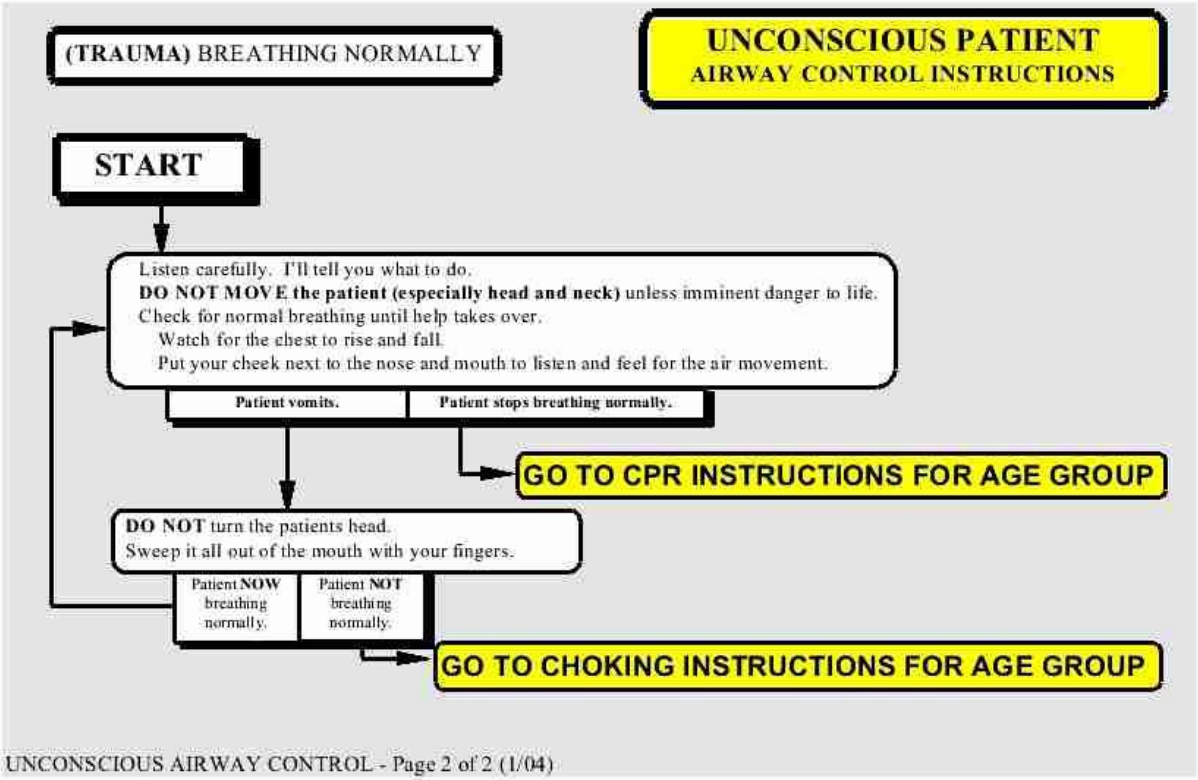
Do not leave patient, be prepared to do CPR.

Gather patients medications, if possible.

If the patient's condition changes, call me back.

Prompts	Short Report
Go to UNCONSCIOUS/BREATHING NORMALLY AIRWAY CONTROL If unconscious, NOT breathing normally, go to CPR for appropriate age group.	Age Sex Specific location Chief complaint Pertinent related symptoms Medical/Surgical history, if any Other agencies responding Any dangers to responding units





UNCONSCIOUS AIRWAY CONTROL - Page 2 of 2 (1/04)

AIRCRAFT / TERRORISM

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

PSAP receives a call from a passenger or crewmember onboard an airborne aircraft, reporting a hijacking or other violent potential terrorist event.

- **Caller Information (name and seat number).**
- **Flight Information (airline, fight no., departure & destination airports.**
- **Caller cell number.**
- **Individual's intentions or intended target.**
- **Is anyone hurt or injured? – Are you in a position to help with the victims?**
- **Initiate any local protocols.**
- **"STAY CALM", "Tell me what happened", keep caller on line.**
- **(Patch through to NEADS if requested).**

If a medical problem exists go to appropriate guide card.

DISPATCH

WHEN TO CALL	WHEN NOT TO CALL
Emergency call from an airborne aircraft. • **Suspicious airborne object or aircraft.** • **Aircraft theft in progress or just occurred.** • **Notify NEADS at** **NEADS-Northeastern States** **315-334-6311/6802 (ul)**	Complaints about sonic booms. Aircraft noise complaints that are reported in the vicinity of airports. Reporting a crop duster spraying an agricultural field. Reporting a military aircraft flying in a typical military operations area. **IF IN DOUBT.... PLEASE CALL**

Contact information details outlined below:

A. SEADS: Southeastern states would call (850) 283-5205/5207.
B. NEADS: Northeastern states would call (315) 334-6311/6802.
C. WADS: Western states would call (253) 382-4310/4311.
D. ANR: Alaska would call (907) 552-6222/6293.

The above phone numbers are privileged phone numbers and should not be shared with private citizens. These numbers are for PSAP use only.

HAZMAT INCIDENT GUIDE

State of New Jersey EMD Guidecards Version 1/04

KEY QUESTIONS

Where is the emergency? Actual incident location, direction of travel if applicable:

Best access route to facility:

Are you in a safe location? If YES: continue questioning
If NO: advise caller to move to safe location and call back

Type of hazardous material Incident:

- Explosion
- Fire
- Motor Vehicle Accident
- Leak / Spill
- Abandoned container / materials
- Odor Complaint
- Air release
- Illegal dumping
- Other:

Are there any injuries?
IF NO: go to next question
IF YES:
How many people are injured?
What is the nature of the injuries?
Refer to appropriate medical guidecard or local protocol

Name and/or ID # of material:

State of material: Solid Liquid Gas

DISPATCH

EMERGENCY MEDICAL DISPATCH	Hazardous Materials Agency Dispatch
Refer to the appropriate medical guidecard or follow local protocol.	**Notify County and all applicable agencies (NJDEP, Local and/or County OEM, etc.) per local protocol on any affirmative responses to items marked * in the prompts section below.**

HAZMAT INCIDENT GUIDE Pre-Arrival Instructions

If you are not in a safe location, leave the area and call back.
Gather available chemical information
Deny entry to affected area. Secure premises, isolate area.
Isolate injured from scene if safely possible.

Prompts	Short Report
Amount spilled or released: Size / Type of container: Is release: (Check as many as apply) Continuous *Entering a waterway Intermittent *Entering a storm drain or sewer Contained Other: Have personnel been evacuated? YES NO Are there any emergency responders or HAZMAT trained personnel on the scene? IF YES who are they? fire brigade security other Is chemical information available for responders? (I.e.: MSDS, Hazardous Substance Fact Sheet) IF NO go to next question IF YES: Please have it ready for the emergency responders. Wind Direction: N S E W (If not available from caller, obtain from field units) *Is chemical listed as an inhalation hazard or is immediate isolation indicated? (Refer to DOT Guidebook or NLETS) * ***SEE* "Hazardous Materials Agency Dispatch" *block for these items***	Incident location Access route Type of HazMat incident Number and nature of injuries Release type Wind direction

GUIDELINES TO REQUEST AN ON-SCENE HELICOPTER

Air transportation should be considered when emergency personnel have evaluated the individual circumstances and found any one of the following situations present.

ENVIRONMENTAL FACTORS

- The time needed to transport a patient by ground to an appropriate facility poses a threat to the patient's survival and recovery.
- Weather, road, and traffic conditions would seriously delay the patient's access to Advanced Life Support (ALS).
- Critical care personnel and equipment are needed to adequately care for the patient during transport.
- Falls of 20 feet or more.
- Motor vehicle accident (MVA) of 20 MPH or more without restraints.
- Rearward displacement of front of car by 20 inches.
- Rearward displacement of front axle.
- Passenger compartment intrusion.
- Ejection of patient from vehicle.
- Rollover.
- Deformity of a contact point (steering wheel, windshield, dashboard).
- Death of occupant in the same vehicle.
- Pedestrian struck at 20 MPH or more.

INDICATORS OF SEVERE ANATOMIC OR PHYSIOLOGIC COMPROMISE

- Unconsciousness or decreasing level of consciousness.
- Systolic blood pressure less than 90 mmHg.
- Respiratory rate less than 10 per minute or greater than 30 per minute.
- Glasgow Coma Score less than 10.
- Compromised airway.
- Penetrating injury to chest, abdomen, head, neck, or groin.
- Two or more femur or humerus fractures.
- Flail chest.
- Amputation of an extremity.
- Paralysis or spinal cord injury.
- Severe burns.

1-800-332-4356
REMCS (Newark)

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